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Inside Dope

By GEORGE F. TAUBENECK

Learn to live and laugh — this delay your epitaph

Stories of the Week
Carl Sandburg Has a Successor In Les Beals
Lucky Fellow

Stories of the Week

According to biographer Catherine Drinker Bowen ("Yankee from Olympus") the wife of Supreme Court Justice Oliver Wendell Holmes was "plain but witty."

Here's how she took the news of her husband's elevation to our nation's highest tribunal:

"How can I go to Washington? I, who look like an abandoned farm in Maine?"

"Odd thing about Phil. He wins at poker, then turns around and loses it all at the race track. How do you figure it?"

"Simple. He can't shuffle the horses."

What is it that occurs twice in a moment, yet not once in a thousand years?"

Answer: the letter "M."

Carl Sandburg Has a Successor In Les Beals

Not so long ago "Dope" and Bob Price—that eminent virtuoso snorer, poetry-quoter, and *bon vivant* — were redcarpeted through Carrier's magnificent new headquarters in Syracuse, N. Y.

"Well, what's your impression?" queried our guide, afterward. Only way we could respond to all the magnificence we'd seen was to quote our Good Lord Jesus:

"In my Father's House are many mansions."

Perhaps the most interesting of these "mansions" is inhabited by a most interesting fellow, Les Beals. And therein Les read to us a script he had written for a Carrier film.

It entranced poet-snorer Bob so much that he obtained a bootleg copy. It impressed "Dope," too. This stuff is *literature*. Herewith an abbreviated version:

"As pages torn from a calendar, our manner of living seems to change little from day to day. But life in America has changed.

"It has changed more in the four decades since 1920 than in the 400 years since Columbus landed in the new world. Each of these decades had a character unique unto itself . . . as individual as a fingerprint . . . as indelible as an umpire's call.

"People made it what it was.

(Concluded on Page 21, Col. 1)

Robertshaw-Fulton To Make New Free Piston Compressor

RICHMOND, Va. — Negotiations have just been concluded giving Robertshaw-Fulton Controls Co. an exclusive license to manufacture and market a new free piston refrigerant compressor for air conditioning applications, it was announced by T. T. Arden, president.

The gas-driven unit is claimed to be "completely competitive with present cooling systems" and to offer certain special advantages.

"The device is a combination of a remarkably simple and efficient internal combustion engine and refrigerant compressor in a single unit having only one moving part," the announcement explained. "It is designed to handle the commonly used refrigerants."

Arden said it is hoped that units suitable for 3 to 6-ton central home air conditioners and smaller units for automobiles can be brought to the market in 1961.

Robertshaw will manufacture and market the free piston engine-compressor unit only, Arden said, believing that the unit can easily be adopted and used by any present manufacturer of conventional air conditioners.

"The piston is called 'free' because there are no mechanical links from it to the use of power," it was pointed out. "Combustion of gas takes place at one end of the cylinder, and compression of the refrigerant takes place at the other. From this point, cooling action is the same as in the conventional air conditioning unit."

Principles upon which the machine operates were invented by scientists at Battelle Memorial Institute, Columbus, Ohio, under a project of the PAR Research

(Concluded on Page 5, Col. 1)

Amana Bows '60 Room Unit Line

AMANA, Iowa — Amana Refrigeration, Inc. announced that it has increased the life span of its room air conditioners "by up to 50%" and has introduced an automatic mounting that can be put in place with ordinary household tools, "making room air conditioner installation practically a 'do-it-yourself' proposition."

These are two of the highlights of the firm's 1960 line, being introduced across the country.

"The major innovation in durability," the company said, "results from the use of zinc-coated, virtually rust-free, steel in all Amana room air conditioning units. Tests conducted by Amana engineers indicate the resulting absence of corrosion, a major damaging factor in room air conditioners, will add up to 50% longer prime usage to the units.

"This is particularly true in 'rust areas,' such as the Atlantic

(Concluded on Page 8, Col. 1)

ARW Moves Hq. from Columbus to Cleveland

CLEVELAND—The headquarters of the Air-Conditioning & Refrigeration Wholesalers has been moved from Columbus, Ohio to 21877 Euclid Ave., Cleveland 17, it was announced by Thom Muir, executive director.

The move was made Dec. 4 and 5, and the new headquarters

(Concluded on Page 8, Col. 5)

Westinghouse Shows Cooling, Heating Lines

STAUNTON, Va.—New models of self-contained residential heat pumps and air conditioners and additional products in its furnace, commercial, and industrial package unit lines were introduced to distributors by the Westinghouse Air Conditioning Div. in a series of three two-day meetings at the plant here recently.

In addition, the division's plans for product development and marketing were disclosed, and R. K. Serfass, general manager, revealed production thinking with respect to the steel situation.

Present steel supplies and

(Concluded on Back Page, Col. 1)

BEHIND PAGE ONE . . .

RESIDENTIAL Air Conditioning
Survey of Heat Pump Users Presents Reactions on Costs, Service, Products 10

COMMERCIAL Air Conditioning
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Packaged Units Cut Hotel Air Conditioning Operating Costs by More Than One Third 36

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Halstead & Mitchell Bows Complete Air Handler Line for Central Cooling

PITTSBURGH — Halstead & Mitchell announced that it is now manufacturing and selling a complete line of air handlers for centralized conditioning service.

The company offers 16 models, with many variations. Capacities range from 880 to 47,500 c.f.m., according to the firm. Coil face velocities extend from 400 to 7090 f.p.m. These air quantities are obtainable even under static loads up to 2-in. W. G., it was stated.

The air handling units can be used with direct expansion coils (capacities range from 3 to 120 nominal tons under standard conditions), chilled water or hot water coils, or steam coils. Face areas range from 2 sq. ft. to 68 sq. ft.

The air handlers are constructed of heavy fabricated members up to #10-gauge, with formed panels up to #14-gauge. Most panels are removable for easy access in servicing, it was noted.

Discharge direction may be horizontal or vertical. Either high or low velocity filters may

(Concluded on Page 4, Col. 4)

Tax Deadline Finds Mfr. Stocks Gone

Distributors Rush Buying of Room Units

DETROIT—With trucks picking up loads from the manufacturers' loading docks right up through Nov. 30, what was probably the greatest buying rush by distributors of room air conditioners in the industry's history terminated Dec. 1 as the new excise tax regulation, imposing a 10% tax on the sale of all room air conditioners, went into effect.

"I'd make a bet that manufacturers' stocks of room air conditioners as of Dec. 2 didn't total much over 25,000 units," deciares one industry "insider." If this is a true picture, it is in startling contrast to the past several years, when manufacturers had year-end inventories ranging up to a half-million units.

There was plenty of evidence that distributor buying had been on a sharp upswing starting in September. In those areas where distributors report to utilities,

(Concluded on Page 45, Col. 2)

Mueller Climatrol Cooling, Heating Sales Up In '59

MILWAUKEE—H. P. Mueller, Jr., executive vice president of Mueller Climatrol, division of Worthington Corp., reported recently that consolidated sales of its Milwaukee and Alhambra, Calif. facilities this year "compared favorably with performance of a year ago and with the residential heating and air conditioning industry."

Mueller said the division's gas furnace sales "were up 30% as compared to 1958 while the industry increased by 25%." The report added that Mueller "increased in cooling unit sales by 54% while the industry is estimated to increase by approximately 45%."

Although the residential housing market will be somewhat depressed in 1960 (Mueller is

(Concluded on Page 4, Col. 5)

Paper Features Drive on Bad Heating Jobs

DETROIT — Efforts of Detroit's Better Heating & Cooling Bureau to improve heating installation standards here got an assist from one of the metropolitan newspapers recently.

In a story spread across the top of the first page in the weekly building section, the *Detroit Free Press* printed some of the actual owner complaints being received by the bureau.

"Installers Blamed for Bad Heating Plants," the headline read.

"Furnace is so noisy it drowns out television" was the featured complaint.

Point of the article was that

(Concluded on Back Page, Col. 5)

A. LOUIS SOZIO
SOZIO REFRIGERATION CO.
Revere, Mass.

TAKE IT FROM ME...

"Misfit parts can ruin a reputation for good appliance service!"

"Sure, we have been tempted by some of the so-called bargains offered by off-brand parts outfits. But, take it from me, you don't build a good service reputation with customer complaints, and there's no profit in time wasted adapting misfit parts . . . or in unnecessary call-backs. *Customer loyalty to us depends upon our loyalty to customers*—so when we make a promise, we keep it. The Frigidaire District Parts Office, backing up our own Parts Department with over 31,000 factory-engineered replacement parts and accessories, makes it easy for us to keep promises. Customers know we have the necessary parts or can get them quickly! And they know we take pride in doing the job right on the first call! Does it pay off? In just five years, we've built an eighteen-man organization with nine service trucks—plus one delivery truck—all equipped with two-way radio to speed low cost, factory-trained service to more people! And—we're enlarging our facilities for the fourth time!"

A. Louis Sozio

SOZIO REFRIGERATION CO.
Revere, Massachusetts

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In Frigidaire Training Programs, at General Motors Training Centers and District Offices across the country, improved customer relations is the underlying goal of every instructor. When every one of your men is properly trained, qualified to do the job right the first time, you are well on your way to the kind of customer loyalty that can only pay off in sales and profits.

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TO BUILD YOUR SALES THROUGH SERVICE LEADERSHIP!

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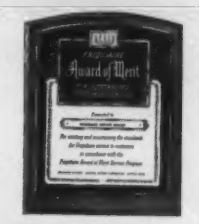

but not as a gift!

The Award of Merit is an earned honor. No promotional gimmick, the Frigidaire Award of Merit plaque is presented only to those Frigidaire Dealers who meet and maintain eight standards of service excellence . . . a reward for loyalty to customers. For more details, and for factory-engineered parts, call or write:

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1018 Main St.

CHARLOTTE 1, N. C.
P. O. Box 1192

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DENVER 4, COLO.
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North Kansas City

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Minneapolis 14, Minn.

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NEW YORK 19, N. Y.
1775 Broadway

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500 E. Hunting Park Ave.

PITTSBURGH 6, PA.
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PORTLAND 9, ORE.
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Smith Distributing Co.
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MIAMI 36, FLA.
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OMAHA 8, NEB.
Major Appliance Co.
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SYRACUSE 1, N. Y.
Onondaga Supply Co., Inc.
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TAMPA 2, FLA.
Byars-Forgy, Inc.
105 Twiggs St.

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1901 Eglinton Avenue, E.
Scarborough, Ont., Can.

GM
FRIGIDAIRE
Division of General Motors
Frigidaire Service Department,
Dayton 1, Ohio

Trickler Elected AMCA President

DETROIT—The board of directors of the Air Moving & Conditioning Association, Inc. has announced the election of Earl E. Trickler as president of the association.

E. E. Trickler

Trickler, who is vice president of marketing for the New York Blower Co. of Chicago, has served on the AMCA board of directors, as chairman of the AMCA Certified Ratings Committee, and the Centrifugal Fan Div.

"We foresee," stated Trickler, "a busy year ahead of us in utilizing the results of the recently-completed investigations and research on air measurement methods conducted by Battelle Memorial Institute, Columbus, Ohio, which AMCA sponsored."

According to Trickler, work is already under way on revision of the association's standard methods of testing and standards for air moving equipment.

They Want No More *Exfiltration....*

FORT WORTH, Texas — County Judge Marvin Simpson favors construction of an air conditioned addition to the Tarrant County jail.

His idea, however, is not to make things more pleasant for the inmates. He says that with air conditioning, windows could be omitted from the jail, thus making it more difficult for prisoners to escape.

....Infiltration

PORTLAND, Ore.—In a report concluding its month-long service, the October County Grand Jury requested air conditioning.

Air conditioning is needed, the jury said, because street noises from open windows drown out the voices of witnesses. The jury room has a fan but, the jurors said, it also drowns out witnesses' voices.

A. O. Smith Expands Electric Motor Plant

MILWAUKEE—A $1,400,000 expansion of its Tipp City (Ohio) Electric Motor Div. has been started by A. O. Smith Corp.

W. H. Dickenson, division manager, said the program will increase the division's production area by 45%. The estimated cost includes expenditures for additional tools and equipment as well as a 42,000-sq. ft. addition to the plant, he pointed out.

The expansion was considered necessary to help meet the increasing demand for the company's electric motors, according to Dickenson.

NEWS readers are invited to write to the editor giving their opinions on any subject of interest to the industry.

Businessmen Still Battle Milwaukee Water Use Fee

MILWAUKEE—The long battle over a special charge for use of water in air conditioning systems flared up again recently.

In arguments before the state public service commission in Madison, Maxwell H. Herriott, an attorney representing the Goodman-Bensman funeral home here and other business firms, asked the commission to rescind its approval of the fee. The request was opposed by Harry G. Slater, deputy city attorney.

Herriott said the purpose of the surcharge is to discourage firms from using air conditioning systems which do not conserve and reuse the water. He claimed this could be accomplished better by the common council banning outright the installation of new non-conserving air conditioning equipment.

In 1957, the public service commission authorized the city of Milwaukee to charge an extra $10 a year for each ton capacity of water-cooled air conditioning equipment which did not recirculate the water. Systems of less than 3 tons' capacity were exempt.

However, the city has never put the charge into effect, pending further study by both the city and the commission.

The request for the extra charge, Herriott said, resulted from a city water shortage. Yet, he contended, Milwaukee pumps less water today than it did in 1955 and the "water emergency that they thought existed" no longer exists.

In any event, Herriott asserted, the surcharge should not be put into effect until the city's present waterworks expansion program is completed.

Deputy city attorney Slater said Herriott's proposal that the surcharge apply only to newly-installed equipment was discriminatory and might be illegal.

Herriott indicated that he would appeal to the courts if the commission permitted the city to levy the surcharge on the basis approved in 1957.

Myron Miller Dies

NEW YORK CITY—Myron D. Miller, Jr., secretary of the National Mineral Wool Association, died Nov. 24 of a cerebral hemorrhage at his home in Maplewood, N. J. He was 36.

Miller had been secretary of the NMWA since January. Before that, he served four years as secretary of two sections of the National Electrical Manufacturers Association, the Wire and Cable section and the Electric House Heating Equipment section.

Before joining NEMA in 1954, he was executive secretary of the Refrigeration Industry Safety Advisory Committee. He also held posts in the research and taxation divisions of the Commerce and Industry Association of New York, Inc.

Surviving are his widow, Mrs. Louise M. Miller (nee Cobb); two daughters, Nancy, 7, and Carol, 2; his father; and two sisters.

PERCHED ON A SLEDFULL of heating controls amidst a 10-ton snowfall (artificial), pert Joanne Boyne (not artificial) helps launch General Electric Co.'s nationwide weather forecasting contest for heating control dealers.

How Much Snow In Stampede Pass? Best Guesser Gets Trip to Florida

SCHENECTADY, N. Y.— General Electric Co., through its heating control distributors, has announced a nationwide contest to forecast the snowfall and temperature at two geographical locations within the United States.

The company's Appliance Control Dept., Morrison, Ill., is offering, as first prize, a trip for two to Florida for the dealer that comes closest to predicting the correct amount of snowfall at Stampede Pass, Wash., and the temperature at Mt. Washington, N. H.

There are five additional national cash prizes and the best dealer "weatherman" at each General Electric heating control service center will receive a weather barometer. The service centers sponsoring the winning dealers will be awarded duplicate prizes. There also will be a prize for the service center submitting the most entries.

To enter the contest a contestant must submit an entry blank obtained from an authorized General Electric heating control service center and merely forecast the number of inches of snow that will fall at Stampede Pass, Wash., during the period Dec. 1, 1959, through Jan. 15, 1960. He then must forecast the lowest temperature that will be recorded at the Mt. Washington observatory, N. H., on Jan. 15, 1960.

Entry blanks may be turned in to General Electric heating control service centers or mailed. Entries must be postmarked no later than Dec. 31.

NLRB Orders Plumber To Bargain With UA

WASHINGTON, D. C. — The National Labor Relations Board has ordered North Dade Plumbing, Inc., North Miami, Fla., to bargain collectively, upon request, with Plumbers' Local 519, Plumbers & Pipefitters, AFL-CIO, as exclusive representative of all plumbers at the North Miami shop.

The company also was ordered to cease threatening to close down its business before having a union in its shop, and offer reinstatement and back pay to six employes.

NEW!

Amana
REFRIGERATION, INC.
ONE OF THE LEADING AIR CONDITIONER MANUFACTURERS
uses
REVCOR'S NEW DOUBLE INLET BLASTAIRE BLOWER WHEELS
because . . . Revcor's New Double Inlet Blastaire Blower Wheels use less space and meet the high performance and quality standards demanded by Amana!
REVCOR SINGLE AND DOUBLE INLET BLASTAIRE BLOWER WHEELS ARE USED BY OVER 60% OF THE ROOM AIR CONDITIONER MANUFACTURERS!
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Revcor, INC. 251 EDWARDS STREET CARPENTERSVILLE, ILLINOIS

Oklahoma City Getting Cool Buses

OKLAHOMA CITY — Although renewal of its 10-year operating contract was not certain, City Bus Co. went ahead with plans to put its first air conditioned buses into service here next spring.

A 1960 model of the bus was displayed here recently. The 54-passenger demonstrator bus boasts 10 tons of air conditioning.

"This is a completely new model with considerably advanced designing, including factory-installed air conditioning," said Doug Bowers, assistant general manager of City Bus. "We plan to purchase 10 or 15 for delivery next spring."

The new buses, which would be the first in a city fleet with factory-installed air conditioning, will cost about $32,000 each.

Mark IV Sales Up 50%

DALLAS — Manufacturer's representatives from across the nation, meeting here to hear details of the 1960 program for Mark IV auto air conditioners, were informed by officials of the Mark IV Div. of the John E. Mitchell Co. that 1959 sales were up 50% over the previous year. The new 1960 Mark IV "Monitor" was introduced.

Dunham-Bush Elects Garnsey

WEST HARTFORD, Conn. — Cecil Boling, president, Dunham-Bush, Inc., has announced the recent election of Les Garnsey as secretary of the corporation. Garnsey has served as assistant treasurer since 1953 and will continue in that capacity.

Garnsey joined Heat-X, Inc., Brewster, N. Y., now a wholly-owned subsidiary of Dunham-Bush, in 1947.

Texas Law Does Not Tax Repair Parts

AUSTIN, Texas — Parts for air conditioners bought and used for repair are not taxable under the new 3% sales tax on air conditioners, according to a ruling handed down by Attorney General Will Wilson.

In his opinion to Comptroller R. S. Calvert, who had asked specifically concerning replacements for defective parts in automobile air conditioners, the attorney general held that the tax bill, while specifically taxing component parts of radios, television sets, and phonographs, levied a tax only on air conditioners as units.

Wilson pointed out, however, that "all assemblies, subassemblies, and the like sold for original installation as an air conditioner are taxable, even though repair parts are not."

NEW Halstead & Mitchell air handler is for centralized conditioning service. It is manufactured in 16 models with capacities from 880 to 47,500 c.f.m.

Halstead & Mitchell Air Handler--

(Concluded from Page 1, Col. 4)

be selected, and the choice includes cleanable or throw-away designs.

As an optional feature, vibration isolaters for ceiling hung units may be specified. Insulation is fireproof, vermin-proof, and waterproof, the company said.

"Permanently-sealed ball bearings require no lubrication or servicing," it was pointed out. "Orders may specify variable pitch sheaves, to lend flexibility in air delivery, and centrifugal blowers of the forward curved blade type, balanced and mounted for extra-quiet operation.

"Standard NEMA frame motors can be supplied to fit any application. Motors are positively mounted on an adjustable base.

"A choice of fins in aluminum or copper is available. They feature Halstead & Mitchell's exclusive 'Turbu-Flo' design. Seamless copper tubing is manufactured in Halstead & Mitchell's own complete copper mill.

"All Halstead & Mitchell coils are rigidly inspected, with a final air pressure test of 400 lbs. with the coil submerged in water. After testing, all coils are thoroughly blown out and dehydrated with dry air."

Mueller Climatrol--

(Concluded from Page 1, Col. 5)

forecasting 1,250,000 starts), as compared to 1959, the division's outlook is optimistic, it was stated. Said Mueller: "Another good year is in the offing."

It was also reported that top executives of Worthington spent a day recently in Milwaukee at Mueller Climatrol's annual operations meeting. Mueller personnel presented summary reports on 1959 operations and discussed forecasts, budgets, and specific objectives for 1960.

Top Worthington management officials annually visit each of the 17 domestic operating divisions, it was noted. Worthington also has 12 foreign manufacturing companies.

Earlier, Mueller Climatrol sales representatives from all parts of the nation attended a three-day saes conference at the Schroeder hotel in Milwaukee. New products were presented and finance, sales promotion, and customer education topics were discussed by company officials.

At the annual employe dinner in the Crystal Ball Room of the Schroeder, H. P. Mueller, Sr., president of Mueller Climatrol, presented gold watches to two employes who have completed 30 years' service with the company. They are John A. Zielski and Benedict A. Kujawa.

For Your Reprint Copy

"Short, Short Course in Air Conditioning Fundamentals." By D. C. Schaffer. Mail this ad with your name and address to: Air Conditioning, Heating & Refrigeration News, 450 W. Fort, Detroit 26, Mich.
Only 25¢ each.

CHEVROLET'S REVOLUTIONARY TORSION-SPRING RIDE

the most significant new truck development in decades!

Years of intensive engineering achieved a revolutionary result—a totally new truck suspension system. The most exhaustive chassis engineering program in trucking history proved conclusively that, from the standpoints of both ride and durability, the finest possible truck suspension system would consist of independently suspended front wheels with torsion bar springing. Advancing on this principle, Chevrolet engineers proceeded through years of development to produce a completely new system for the 1960 Chevrolet truck product.

New Torsion-Spring Ride—how it works. The revolutionary result of Chevy's all-out engineering effort—Torsion-Spring Ride—eliminates both the old-fashioned I-beam front axle and friction-producing front leaf springs. Each front wheel, suspended independently of the other through tough control arms and low-friction linkage, is free to step cleanly over bumps without jarring the entire truck. Also, friction-free torsion bars on either side of the chassis, specially mounted to provide a twisting action, work to absorb each jolt; they flex freely to soak up all kinds of shocks, from the smallest to the most severe.

Three new rear suspensions, tough and tailored to the truck, are completely redesigned to complement the independent front suspension in every weight class.

'60 Fleetside proves its stamina on grueling GM Proving Ground test.

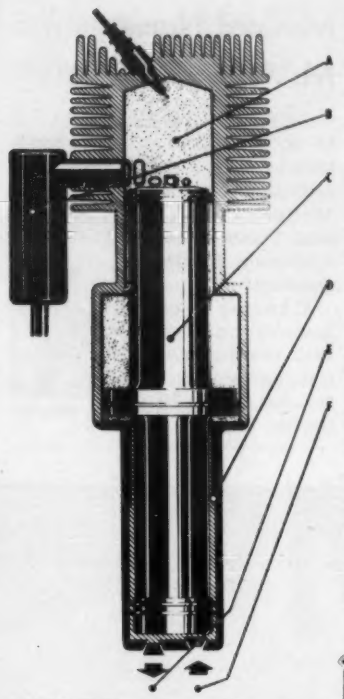
Here's a ride that lets you get more work done in a day's time! Take a '60 Chevrolet truck over a rough stretch of back road and feel the absence of I-beam shimmy and wheel fight. Chevy's torsion springs soak up jolts and jars that would shake the headlights off an ordinary I-beam rig. You move along with maximum payloads at higher safe cruising speeds. You make off-the-highway runs in less time, improving your ton-mile-per-hour rate as much as 100%.

A ride that shows respect for the driver and the load! Out at the GM Proving Ground, the test drivers will take a torsion-spring Chevy any day over an I-beam truck—even if they have to drive it twice as far. The ride's that much better; that much safer. The load, too, has an easier time of it. There's far less bounce and jounce, less danger of damaging fragile cargoes.

A ride that adds extra thousands of miles to the truck's working life! You can be sure the shockproof action of Chevrolet torsion-spring ride means lower maintenance costs. As much as 78% of all objectionable road shock and vibration is absorbed before it can be transmitted to the truck's body and sheet metal. Chevy trucks stay new-looking a whole lot longer and their working life is increased by extra thousands of miles.

Once you've experienced the incredible smoothness of a torsion-spring ride, you'll realize that Chevrolet has set off a full-scale revolution with the introduction of its '60 models. By throwing away the old-fashioned I-beam in favor of independent front suspension, Chevy's new design has improved virtually all phases of truck performance. Drive a new one just once. That's all we ask. . . . Chevrolet Division of General Motors, Detroit 2, Michigan.

1960 CHEVROLET STURDI-BILT TRUCKS CHEVROLET



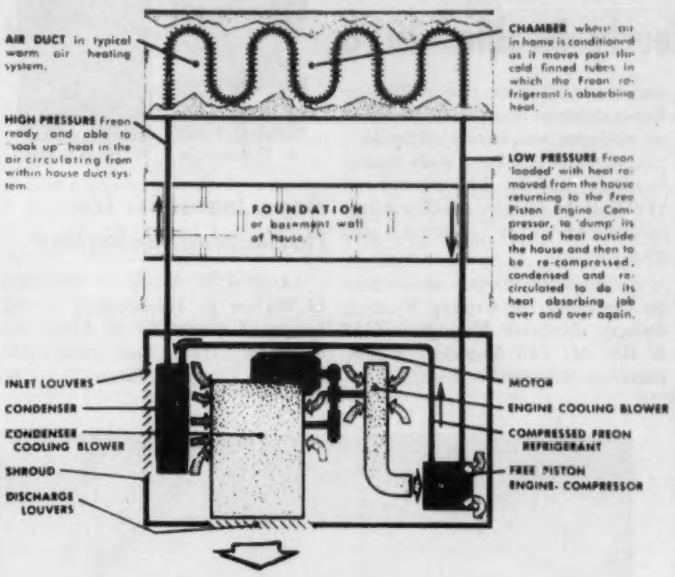
COMPONENTS AND operation of free piston refrigerant compressor: (A) Power cylinder (about the same "bore" as in common lawn mower motors) where natural gas, LP gas, or gasoline is burned. (B) Muffler. (C) "Free piston," alternately pushing downward and bobbing upward, compressing refrigerant on each downstroke. (D) Compressor. (E) Refrigerant to condenser. (F) Refrigerant from evaporator.

mated that more than 200,000 residential air conditioners (not including window conditioners) and approximately 500,000 automobile air conditioners will be sold. He pointed out that competent market analysts are forecasting the sale of residential central air conditioners at the annual rate of more than 1,000,000 units within the next five to ten years.

If only one third of such residential air conditioners use the free piston refrigerant compressor and its attendant automatic controls, Arden said, it will represent a business for Robertshaw embracing a minimum of $35,000,000 in annual sales.

Regarding automotive applications, Arden said a completely separate, small and compact unit operating independently of the car's engine but on the same fuel carried in the gas tank should be an important forward step.

Schematic of Free Piston Cooling System


AIR DUCT in typical warm air heating system.
HIGH PRESSURE Freon ready and able to "soak up" heat in the air circulating from within house duct system.
CHAMBER where air in home is conditioned as it moves past the cold finned tubes in which the Freon refrigerant is absorbing heat.
LOW PRESSURE Freon "loaded" with heat removed from the house returning to the Free Piston Engine Compressor, to "dump" its load of heat outside the house and then to be re-compressed, condensed and recirculated to do its heat absorbing job over and over again.
FOUNDATION or basement wall of House
INLET LOUVERS
CONDENSER
CONDENSER COOLING BLOWER
SHROUD
DISCHARGE LOUVERS
MOTOR
ENGINE COOLING BLOWER
COMPRESSED FREON REFRIGERANT
FREE PISTON ENGINE-COMPRESSOR

Ailing Back Curtails Hurley's Activities

ST. JOSEPH, Mich.—After a prolonged period of treatment for a back ailment resulting from an accident, doctors have advised John Hurley, vice president of the RCA Whirlpool Sales Div. that he must curtail his business activities.

As a result, Hurley has requested relief from his present full-time activities and will relinquish his post as vice president effective Dec. 31, 1959.

He will be replaced by Jack Sparks, presently director of marketing.

Starting in 1960, Hurley will be a special assistant to the chairman, Elisha Gray, where he will concern himself with long-range problems in distribution and with distributor and industry relations.

Free Piston--

(Concluded from Page 1, Col. 3)

Program of the American Gas Association.

"The invention represents several years' research and development and is covered by a number of patent applications," the announcement stated. "The patents, as issued, will be owned by Battelle Development Corp., grantor of the license to Robertshaw.

"The agreement gives the controls firm an exclusive license, with the right to grant sub-licenses, to manufacture, use, and sell the unit throughout the world, in sizes up to 20 tons of refrigeration capacity.

"Prototypes have been built and have successfully operated a typical air conditioning system such as is used in homes. Robertshaw is sponsoring continuing research and development work at Battelle Memorial Institute and will devote a substantial portion of its own research and development facilities to incorporate the inventions in a commercial unit which can readily be used by any manufacturer of air conditioning systems.

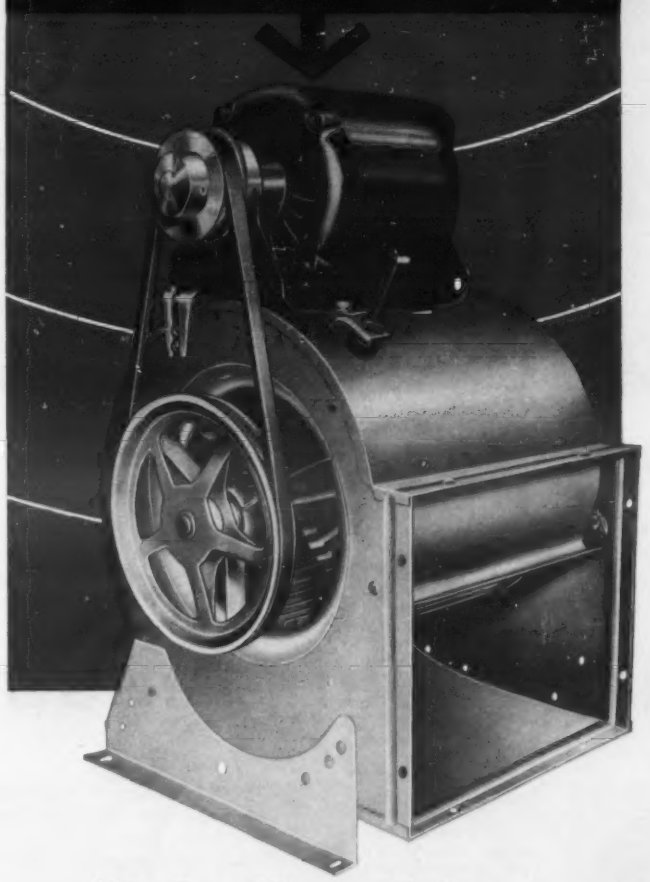
"Simplicity of the free piston refrigerant compressor is expected to permit manufacture of a unit completely competitive with any other 'cold maker' for air conditioning, including electric motor driven units, as to first cost, dependability, and quietness of operation. In addition, in many parts of the U.S., low operating costs are expected to be realized.

"The compressor engine runs on natural gas, bottled gas, and with minor modification, on ordinary automotive gasoline."

Advantages of the unit, Arden stated, indicate that it may enjoy substantial acceptance and usage in air conditioning for the home, for stores, motels and offices, and for autos, buses, trucks, and aircraft.

In 1959, he said, it is esti-

SERIES A



"Features exclusive LAU FIRSTS"

Here's the most versatile blower manufactured today! The Lau Series A is extremely efficient in many applications because of its availability in such a complete performance range. Assorted wheel sizes, four standard discharge positions, and a wide selection of C.F.M. characteristics mean you can specify a blower that's practically custom made for you . . . at no extra cost.

Standard Series A features include such Lau exclusives as Preslok® wheels, ground and burnished shafting, Lau Pak Gold Seal bearings, tripod bearing brackets, heavy gauge housing supports, versatile motor mounts, and Lausteel pulleys.

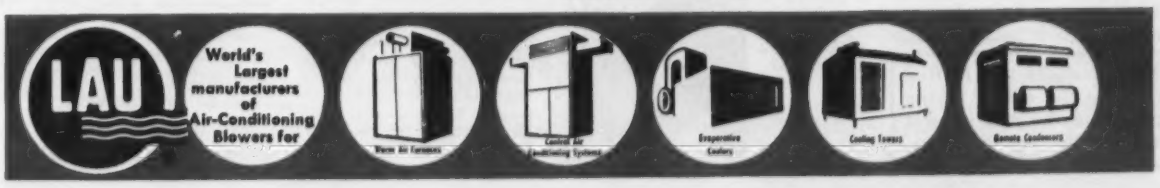
Series A blower assemblies are recommended for warm air furnaces, central air conditioning systems, evaporative coolers, cooling towers, and remote condensers.

Write or call Lau today. We will place you in contact with your experienced Lau Sales Engineer. He's always nearby and ready to help you solve any air moving problem.

MEMBER INDOOR COMFORT

The Lau Blower Company, 2027 Home Avenue, Dayton 7, Ohio.

Other plants in Kitchener, Ont., Can., and Irwindale, Calif.



Western Show Plans Technical Sessions; List of Exhibitors Nearly Doubles 1958

LOS ANGELES—The number of exhibitors at the 1960 Western Air Conditioning, Heating, Ventilating & Refrigeration Exhibit & Conference, which will be held at Shrine Exposition Hall here April 27-30, is almost double the number in the 1958 show, according to Fred J. Tabery, exhibit manager of this biennial event.

Arthur J. Hess, first vice president of Western Air Conditioning Industries Association, the show's sponsoring organization, with the help of a committee, has contacted prominent consulting engineers, architects, and contractors to be speakers and discussion group leaders of the technical sessions.

Each session is being designed as an educational course for all in attendance.

Program plans include a special Engineers' Day April 28, Contractors' Day April 29, and Practical Applications Day April 30.

Engineers' Day

Engineers' Day will feature a clinic for junior engineers on fan auxiliary equipment with discussions and lectures by experts on selection of fan drives for maximum ultimate efficiency; the study of selection of the proper electric motor to fit the job; motor control equipment; and vibration control of equipment.

A panel discussion by two consulting engineers, an architect, contractor, salesman, and a manufacturer on specification writing will be a feature of the conference for senior engineers, together with a symposium on methods of cooling, encompassing absorption refrigeration, natural gas driven refrigeration, and heat pumps.

Contractors' Day

Contractors' Day will have technical sessions for wet heat contractors on piping connections for steam and hot water boilers, sessions for sheet metal contractors on high velocity duct systems, and a clinic on temperature control systems conducted by members of Honeywell, Powers, Barber-Colman, and Johnson Service.

There will also be technical sessions for refrigeration contractors with a forum of experts discussing direct and indirect evaporation cooling, cooling towers, once-through condensers, and all-air condensers.

Practical Applications Day

Practical Applications Day will feature advance methods of air conditioning installation and will be of interest to engineers, contractors, junior engineers, and journeymen. Discussions will be held on piping, sheet metal, testing and balancing systems, condenser and boiler maintenance, and refrigeration defrosting methods.

In addition there will be special meetings on the following five subjects: hospitals—control of airborne infections; schools—preparation for future air conditioning; hotels—importance of ventilation in air conditioning; residences—heat pumps, and gas cooling.

A brochure on the show may be obtained by writing Fred J. Tabery, Exhibit Manager, 3443 S. Hill St., Los Angeles, or telephoning RIchmond 9-1091.

NEWS readers are invited to write to the editor giving their opinions on any subject of interest to the industry.

R. Robertson

W. Hassenplug

Acme Industries Ups Hassenplug, Robertson

JACKSON, Mich. — Election of Walter M. Hassenplug to the board of directors of Acme Industries, Inc., has been announced by Kenneth A. Weatherwax, president, following action by the company's stockholders. Hassenplug is an executive vice president of Acme.

Weatherwax also has announced that the board of directors has promoted Robert C. Robertson from director of sales to vice president in charge of sales, a newly-created position in the firm.

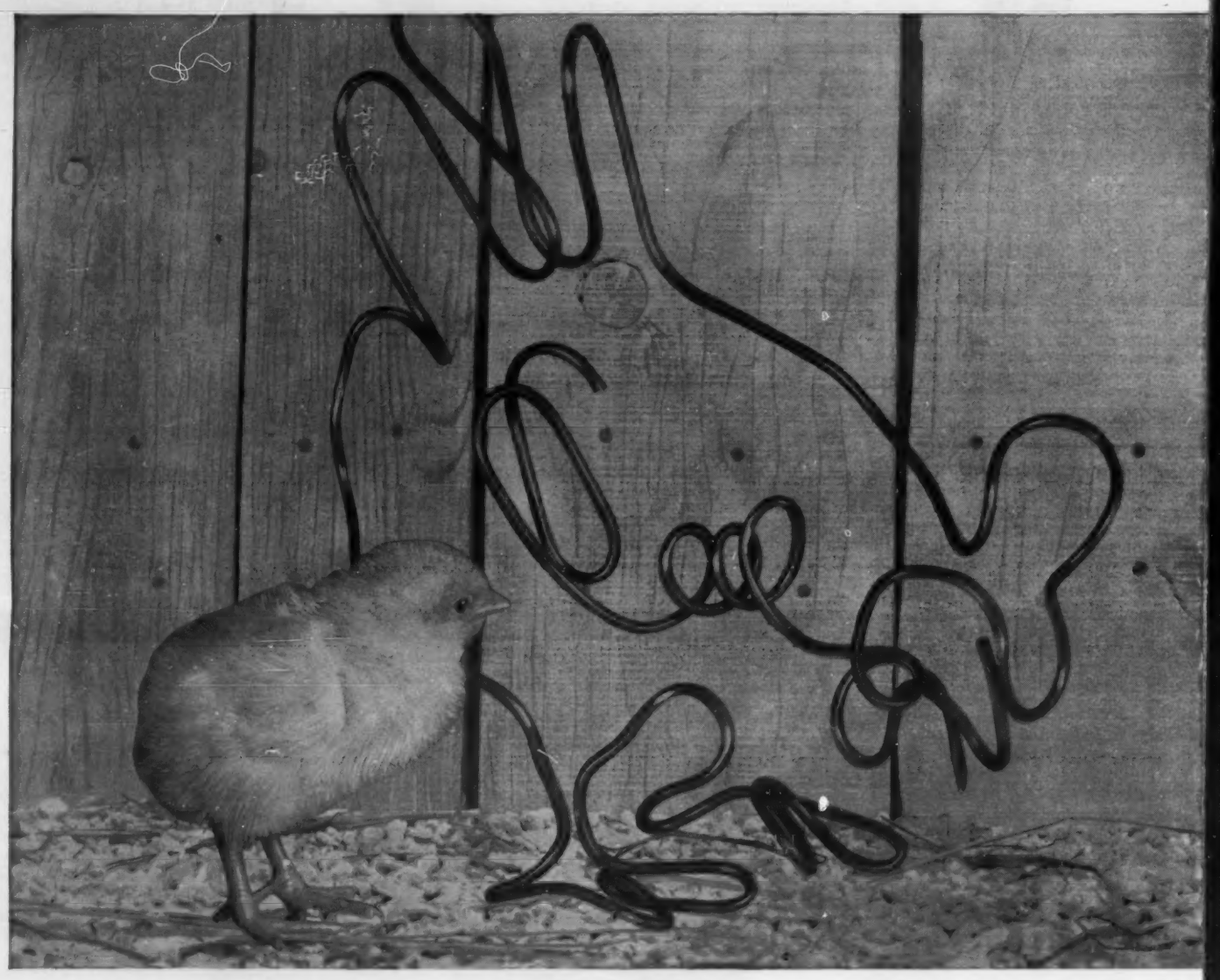
Hassenplug, an executive vice president since June, had been a vice president and the company's director of engineering since joining Acme in 1956. Robertson has been with Acme since 1957.

McCord Names M. A. Mieras

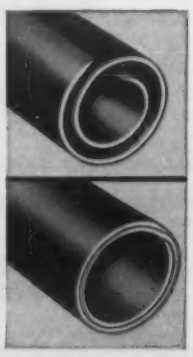
DETROIT — Appointment of M. A. Mieras as executive engineer in charge of all engineering activities of the McCord Corp. was announced by Dean S. Fields, president.

Mieras has been connected with the automotive parts industry for some 30 years.

M. A. Mieras



There's almost no limit to the things Bundy can mass-fabricate



Bundyweld is the original tubing double-walled from a single copper-plated *steel* strip, metallurgically bonded through 360° of wall contact for amazing strength, versatility.

Bundyweld is lightweight, uniformly smooth, easily fabricated. It's remarkably resistant to vibration fatigue; has unusually high bursting strength. Sizes up to ⅝" O.D.

The old adage, "Don't count your chickens before they hatch," is a good one . . . but it rarely applies to Bundy. That's because, no matter how complex your tubing problem, you *can* count on Bundy for the perfect solution.

Bundy engineers and designers are backed by years of experience in the mass-fabrication of steel tubing. And they are available to you at any stage of product development for time- and money-saving suggestions. Their key: Bundyweld®!

Bundyweld steel tubing is double-walled, copper-brazed, leak-proof by test, and the safety standard of the refrigeration industry. Beveled edges provide smooth inside and outside seams. No inside flash to be removed.

So, when you want to talk tubing, talk to the leader—Bundy! Phone, write, or wire Bundy Tubing Company, Detroit 14, Michigan.

Refrigeration Research Moves Offices, Plant

BRIGHTON, Mich.—Refrigeration Research, Inc. recently moved its offices and main plant to new quarters at 525 N. Fifth St. here.

E. W. Bottum, president, said the move was necessary to provide more manufacturing space at the Brighton plant and to consolidate offices, engineering, and laboratory facilities.

This current move is the largest of many plant expansions in the company's history, it was pointed out. The firm has manufactured refrigeration parts, supplies, and accessories for original equipment manufacturers and the wholesale trade for 16 years.

Christenburg Joins Duke

CHARLOTTE, N. C.—Ben L. Christenburg, widely known in residential heating and air conditioning circles, has joined Duke Power Co.'s consulting service on heating and air conditioning problems.

Prior to joining Duke, Christenburg was sales manager of Carolina Conditioners, Inc.

Copeland Enters Large Compressor Field With 7½ to 30 Hp. Hermetic Model

ATLANTIC CITY, N. J. — A new line of hermetic motor-compressors up to 30 hp., a new 1,750 r.p.m. welded hermetic motor-compressor design up to 4 hp., and two newly-designed lines of air-cooled and water-cooled condensing units were unveiled by Copeland Refrigeration Corp. at the ARI Exposition held here recently.

Copeland's new 7½-30-hp. "Copelametic" compressor marks the company's entry into the large compressor field. Heretofore, Copeland has made compressors through 10 hp. only.

The new products include four and six cylinders. Two banks of two cylinders each are canted at 90° in the four-cylinder model, for applications ranging from 7½ hp. low temperature to 10, 15, and 20 hp. high temperature.

In six-cylinder models, three banks of two cylinders are mounted at 60° angles. Applications range from 10 hp. low temperature to 15, 20, 25, and 30 hp. high temperature.

The new and larger products feature compactness, lightweight aluminum components, and dual-voltage 220/440-volt motors, the company said.

The new "Copelaweld" entry into the welded hermetic compressor field is a four-cylinder, two bank design with a 90° cant between cylinder banks. It is driven at 1,750 r.p.m. by a four-pole hermetic motor.

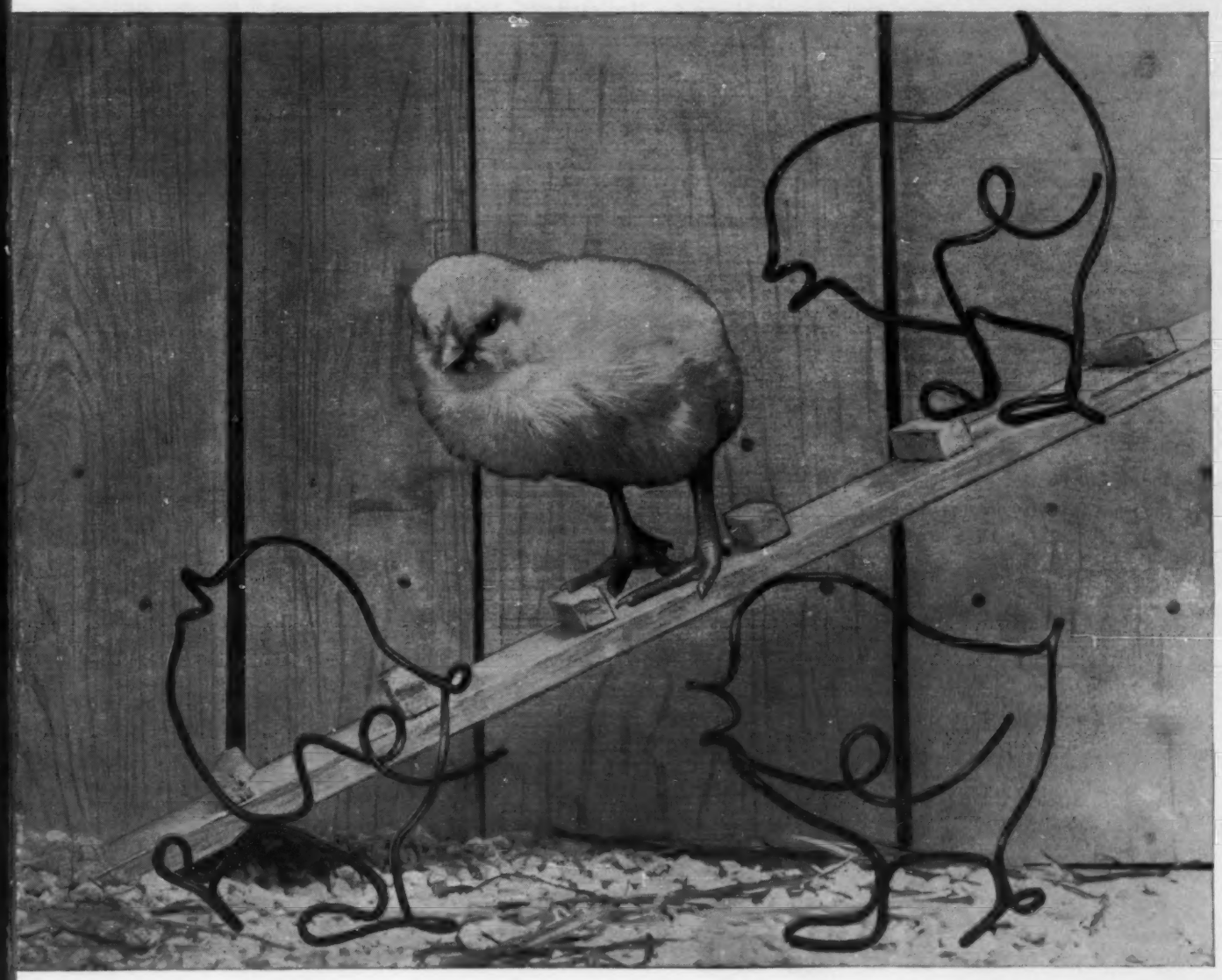
Named the "4U" series by Copeland, the package has been designed for use in heat pumps as well as in conventional air conditioners. It is available in 2½, 3, 3½, and 4-hp. sizes and features compactness, use of aluminum components, internal hermetically sealed inherent motor protection, internal spring mounting, and externally quiet operation, the firm says.

Regarding the new air or water-cooled "Copelametic" condensing units, the company explained that in the water-cooled line, the compressor, controls, starting capacitor, and relay (when required) are mounted on "wings" welded atop the condenser-receiver.

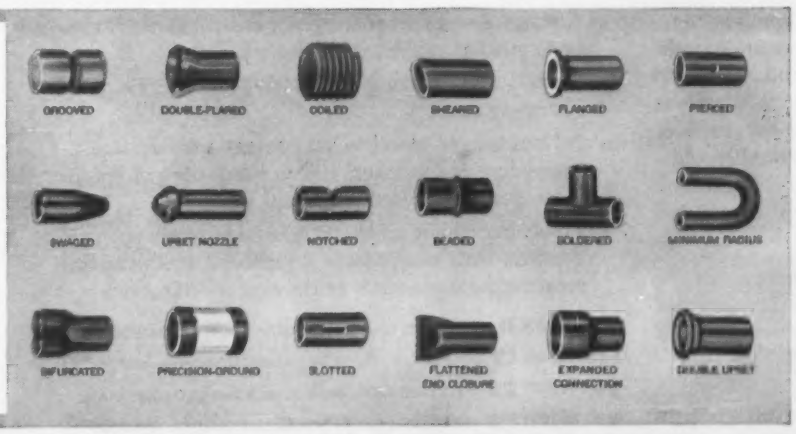
Two additional "wings" welded on the bottom provide stability to the entire unit, it was noted. The complete line from ¾ hp. is available on three standard base lengths.

The air-cooled line of units from ¾ through 5 hp. is mounted on two standard base sizes. Through redesign and rearrangement of condensing unit components (condenser, receiver, fan, and motor assembly) "an ideal degree of compactness and serviceability has been attained," Copeland claimed. Instead of two, all models now have a single condenser fan.

Both air and water-cooled units are designed to be incorporated into "rack" installations, "reflecting the current trend in refrigeration and air conditioning multiple unit installations."



No matter what type of mass-fabrication you require, Bundyweld may be your answer. Shown here are just a few tubing operations designed and fabricated by Bundy—many for use in the refrigeration industry.



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BUNDYWELD® TUBING

WORLD'S LARGEST PRODUCER OF SMALL-DIAMETER TUBING • AFFILIATED PLANTS IN AUSTRALIA, BRAZIL, ENGLAND, FRANCE, GERMANY, AND ITALY

BUNDY TUBING COMPANY • DETROIT 14, MICH. • WINCHESTER, KY. • HOMETOWN, PA.

American-Standard Div. Names John F. Tobin

DETROIT — Appointment of John F. Tobin as vice president-marketing has been announced by A. O'B Andrews, president of American-Standard Industrial Div.

J. F. Tobin

Tobin is a University of Illinois graduate with a degree in mechanical engineering. He has been with American-Standard since 1923 and has served in a variety of sales management positions during this time, most recently as a regional manager for the Industrial Div.

Tobin's appointment fills a vacancy created by the retirement plans of E. W. Petersen, who has served as vice president-marketing for the past three years. Petersen will remain a vice president and marketing consultant to the division until Jan. 1, 1961, the effective date of his retirement after 37½ years' service.

Amana Room Air Conditioners for '60--

(Concluded from Page 1, Col. 2)

or Pacific seaboards, where air conditioning units frequently are made especially for rust resistance at an added cost to the purchaser.

"The automatic mount installation comes with every Amana room air conditioner and requires only a knife and a screwdriver for installing. It can be sealed tightly into a window with a gasket sealing and is completely weatherproof. The air conditioner is framed in the mounting by durable, plastic filler boards colored an attractive light tan.

"Designed to make room air conditioner installation as 'mistake-proof' and simplified as possible, the mounting permits easy removal and reinstallation of Amana units for cleaning, repair, or winter storage.

"The unit can simply be slid in or out. The mounting can be removed during the winter, if the air conditioner is stored away, or can be left in place with the air conditioner, due to its complete weather proofing. Because of the simplicity of installing the mounting, a customer can have his air conditioner in operation the same day he buys it."

2 Lines Have Greater Cooling In Same Size

The three Amana room air conditioner lines are the "Year 'Round," the "Compact" Series, and the "Air Command."

"Both the Year 'Round and Air Command lines this year have a greatly boosted cooling capacity without increasing the size of the cabinet, according to the company.

"The capacities have been increased from 10,300 B.t.u. to 12,200 B.t.u. in the 1-hp. model, from 13,500 B.t.u. to 14,600 B.t.u. in the 1½-hp. model, and from 16,000 to 18,000 B.t.u. in the 2-hp. unit.

"The boosted capacities in the Year 'Round models also apply to heating performance."

The Amana heat pump is incorporated on models of both the Compact Series and the Year 'Round line.

"Styling changes give all of the models an ultra-modern, streamlined appearance," it was stated. "The 1-hp. Compact unit measures only 13¼ in. high, 25 in. wide, and 16¾ in. deep, and has a high capacity blower for volume movement of air over the evaporator and high cooling efficiency.

"The 1½ and 2-hp. Compact models measure 15 in. high, 25 in. wide, and 20 in. deep.

1960 AMANA COMPACT SERIES of room air conditioners claims increased efficiency and practically trouble-free installation. An automatic mounting kit, available at no extra cost with every Amana room unit this year, means the customer can have his air conditioner installed and working the day he buys it. The mounting can be put in with ordinary household tools, according to the manufacturer. Use of zinc-coated, rust-free steel is said to increase the operating life.

Quietness in the models is credited by Amana engineers to the exclusive Amana "Silent-Aire Turbine."

"A reusable filter is an important feature on all Amana units, can be easily removed, washed, and replaced," the firm said.

In the Air Command line, the units range in size from 1 to 1½ and 2 hp. The dimensions of all three models in this line are 15 in. high, 25 in. wide, and 28 in. deep.

The Amana Year 'Round models come in three capacities and all measure 15 in. by 25 in. by 28 in. The capacities of the units are 1, 1½, and 2 hp.

"To avoid icing up when the outside temperature drops to below freezing, the Amana heat pump, with built-in supplementary heating, uses an automatic defrost cycle that flushes away the frost in minutes while the inside blower is turned off," it was noted. "The unit automatically resumes heating after the defrosting."

Refrigerator-Freezers

Amana also announced that its 1960 line of combination freezer - plus - refrigerators features two models "which completely eliminate frost and the need for defrosting."

With its "Free-O-Frost" models 105 and 125, Amana combines contact freezing with total protection against frost, the announcement said. The combination is also available in a full freeze in the new Amana Free-O-Frost model 16.

In the Free-O-Frost models, the company stated, both the deluxe refrigerator and freezer sections are kept entirely without frost by use of a "Frost Magnet."

"The Frost Magnet," it was explained, "operates on the natural principle that moisture is attracted to cold. The magnet is the coldest point in the unit and, with the aid of a gentle circulation of air, all moisture collects on it, preventing it from settling any place else and forming into frost."

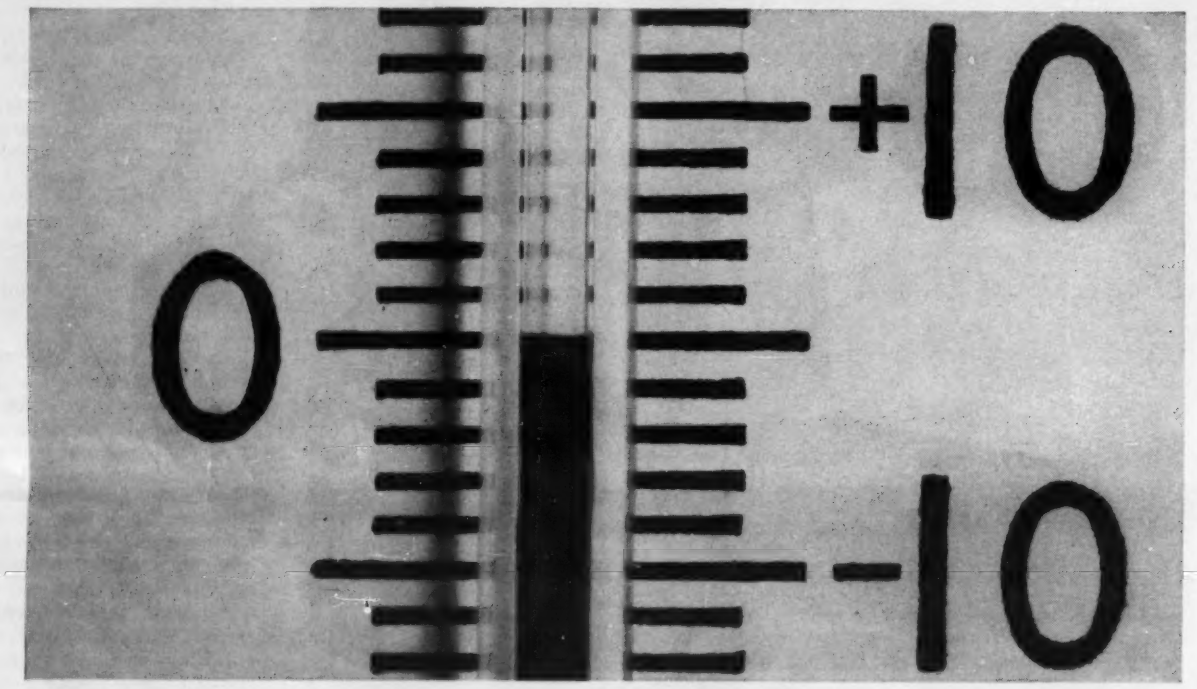
ARW Resolution--

(Concluded from Page 1, Col. 2)

is now "open for business," Muir said.

In another announcement, Charles Koopman, ARW president, said the association has approved a resolution supporting the unitary air conditioner certification program initiated by the Air-Conditioning & Refrigeration Institute in cooperation with the National Warm Air Heating & Air Conditioning Association.

The resolution solicits manufacturers to certify their products under this program, which ARW members believe "will be of immediate and long range value to consumers, dealers, wholesalers, and the air conditioning and refrigeration industry."



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SUPER-DRY REFRIGERANTS

From packing house to supermarket, actual zero temperature (or lower!) is *always* needed to maintain freshness, quality and flavor of frozen foods and to prevent spoilage. That's why you can't take chances. Whatever way your frozen foods are transported—by rail, truck or on board ship—however they are packed, stored or sold—they need the sure protection of modern refrigeration equipment . . . and dependable "Genetron" fluorinated hydrocarbon refrigerants.

"Genetron" Super-Dry Refrigerants are available from refrigeration and air-conditioning wholesalers from coast to coast. See your wholesaler. Insist on "Genetron" in *all* your frozen food refrigeration equipment!

Quick Facts on "Genetron" Super-Dry Refrigerants

- Guaranteed exceptionally low moisture content
- Noncorrosive to standard equipment materials, nontoxic, nonflammable, stable, safe
- Critical and freezing points well outside range of operating uses
- Solvent action on oil helps prevent solidification or congealing of lubricant; aids in lubrication of equipment; generally miscible with oil
- Freely interchangeable and may be mixed in any proportions with comparable fluorinated hydrocarbons meeting the same strict refrigerant specifications

genetron 11 ORANGE LABEL CCl_3F TRICHLOROMONOFLUOROMETHANE
genetron 12 WHITE LABEL CCl_2F_2 DICHLORODIFLUOROMETHANE
genetron 22 GREEN LABEL $CHClF_2$ MONOCHLORODIFLUOROMETHANE
genetron 113 PURPLE LABEL $C_2Cl_3F_3$ TRICHLOROTRIFLUOROETHANE
genetron 114a BLUE LABEL $C_2Cl_2F_4$ DICHLOROTETRAFLUOROETHANE

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New Heating Methods Discussed at Meeting For Architects, Others In Building Field

By C. Dale Mericle

WASHINGTON, D. C.—In an all-day session beamed primarily at architects and others in the building field six papers discussing "new" methods of heating were presented during the recent fall conferences of Building Research Institute here.

Little that was new to the trade, however, was brought out by the six speakers, who touched on such varied topics as energy and fuels, and five basic types of systems: warm air, hydronics, radiant, electric heating, and solar heating.

Conference chairman was John Everetts, Jr., of Charles S. Leopold, consulting engineers.

No immediate change in sources of fuel and energy seem likely, the group was told by A. Leo Jordan of Ebasco Services, Inc., who presented a paper he had prepared with Walter F. Friend.

"Certain trends of the recent past have reversed themselves," Jordan pointed out. "The former threat of impending liquid and gas fuel scarcity, and the prospects of rapid price rise, particularly in Europe, are now replaced by problems of accumulated surplus that arise in part from large coal stockpiles awaiting markets. Petroleum and natural gas suppliers likewise have production capacities substantially in excess of current fuel demands," he said.

"In these circumstances, the rate of construction of nuclear power plants in Europe has slowed from its earlier rapid pace," Jordan added. "Furthermore, the European nuclear program recently reshaped to give greater weight to improvement of designs than to immediate installation of large generating capacity—advocated in order to relieve demands on conventional fuel resources and for unrelated reasons— now more nearly resembles the policy planned by the United States."

All evidence seems to indicate present fuels will be available at least through 1975 at no appreciably higher cost, Jordan said.

In the meantime research continues on the newer energy forms—solar radiation and nuclear—and fuel cells, he explained.

Noting some developments in warm air heating that may come in the near future, Herbert T. Gilkey, technical secretary of National Warm Air Heating & Air Conditioning Association told the conference that "the big change, the big forward step in heating is the increased awareness of the system by the homeowner, the builder, the heating and air conditioning contractor, and the manufacturer."

The dealer-contractor "is the all-important factor in the system's performance," Gilkey asserted. "He can make or break the system, and neither a platinum furnace nor 24-karat gold diffusers can alter this fact."

Several technical developments, however, were cited by Gilkey.

Furnace heat exchangers no larger than a residential cooling coil are seen by Gilkey as a distinct possibility; likewise an induced draft oil burning furnace which would not only improve combustion but also greatly simplify chimney requirements and design.

Revived interest in hydronic systems was indicated by Harold A. Lockhart, vice president and chief engineer, Bell & Gossett Co., who devoted his talk to a discussion of the simplified zoning and piping that is possible with "primary and secondary pumping," as he described it.

This type of hookup, which has actually been in use some 15 years, he explained, allows use of smaller pumps and elimination of some valves.

"It can permit a terrific drop in pump horsepower required," Lockhart emphasized.

The system can also be employed in combination heating and cooling layouts by using the primary pump on the main circuit and separate secondary pumps for the boiler and cooling systems, he said.

Reviewing past and present developments in radiant heating, Prof. J. Raymond Carroll of the University of Illinois outlined some interesting possibilities for the future.

"Very small, unobtrusive elements emitting high intensity infra-red only could be mounted in the walls or ceiling around large glass areas to counteract body radiation loss to the cold glass area," he suggested.

"It is possible that future walls, floors, and ceilings will have electricity conductive films embedded or adhered so that one or more of these surfaces may be varied in temperature as the exterior weather changes.

"Other areas that have not been properly explored," Prof. Carroll continued, "are the draperies, curtains, and blinds around windows. Electric blankets have been successful for years. It should be simple to develop the electric drape."

Various commercial and sports events and outdoor living generally "will definitely require radiant heating in the future," asserted Prof. Carroll, who sees its application in football stadiums, golf courses, outdoor theaters, swimming pools, etc.

"Limitations of electric heating, where they exist, are largely economic," pointed out Frank H. Faust, manager of market research, General Electric Co.,

Use of thermo-electric means for space heating or air conditioning doesn't seem practical in the foreseeable future, according to Faust, but he sees broad prospects for the heat pump.

Although there are several problems involved in solar heating, the future looks bright for such systems, especially when combined with a heat pump, believes Dr. R. C. Jordan, head of the mechanical engineering department, University of Minnesota.

Primary deterrent is the initial capital investment required, he indicated, but there are also the problems of the source's being variable (thus requiring heat storage means), and wide diffusion of sunlight.

Current thinking, however, is that if first cost can be reduced down to twice that of conventional systems from the present six times, then a solar heating system would be competitive, Dr. Jordan said.

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MC-58

"We Have Been Extremely Pleased with the Operation and Efficiency. . . . . ."

Residential Heat Pump User Survey

"There Should Be a Law Against Making People Become Guinea Pigs. . . . ."

Operating Costs, Service, Product Reliability Among Points Mentioned by Those Who Like It and Those Who Don't

By John O. Sweet

DETROIT — "We have been extremely pleased with the operation and efficiency of our heat pump. It is wonderful in summer and winter."

"There should be a law against making people become guinea pigs and have such things as the heat pump out on the market long before they are perfected."

These are two of the answers of residential heat pump users to questions on what they like and don't like about this device. The replies, obtained by the NEWS from surveys and other sources, reveal interesting comments on operating costs, service, product reliability, and other pertinent points.

It is evident from these replies and from other data made available to the NEWS that generally speaking, homeowner-users in milder climates tend to be more satisfied with the heat pump than those in colder areas.

For example, a typical comment from a group of water-source-unit owners in the Carolinas is this glowing testimonial by Dr. Robert E. Burnett of Elloree, S. C.: "To say that I am pleased with the heat pump would be an understatement. Even during the coldest winter days we were able to maintain temperature of 78° without any trouble."

And in Marion, S. C., W. M. Dickson declared: "I cannot recommend the unit too highly."

"We found a great many advantages in addition to having a house a comfortable 78° (this is the temperature we liked best) all summer long that we did not anticipate," he said.

"The fact that the salt would pour all summer very freely, my wife's clothes did not mildew and shoes did not mold, and there was an invigorating quality to the cooling that we have never found in any other type of system."

Thomas A. Willingham, Jr. of Summerville, S. C., reported that his heat pump "has performed quite satisfactorily since its installation, with the exception of a few minor problems which developed shortly after it was started up."

He explained that the original hermetic unit had to be replaced because of a refrigerant leak in the condenser coil ("This, of course, was covered by warranty.") and later, the 220-volt contactor coil failed, probably due to lightning.

"Initially, an attempt was made to utilize an 18,000-gal., filter-type swimming pool as a heat reservoir," Willingham added. "This arrangement did not work out because of insufficient temperature differential, both winter and summer."

So a 330-ft.-deep well was used to supply the unit with 65° F. water, with surplus water available from the well for the lawn or other uses. Approximately $900 was invested in the well system, including a ¾-hp. pump, he added.

Willingham's wife, Eleanor, added "my testimonial" to her husband's report. Referring to "a winter to end all winters" (1957-58), she said the heat pump had been "put to an acid test."

"When everybody was freezing and complaining about the dreadful weather," she stated, "it was mighty hard to sit back and try to look sympathetic. Here we were, snug as a bug with the heat pump merrily keeping us warm, plus a bit of extra radiant heat from the panels, which would kick on when the weather was so extreme."

An equally ardent endorsement came from Charles G. Griffith of "Lake Forest" Developers, Raleigh, N. C., after the firm installed heat pumps in several residences. He said his concern "will continue to use this 21st Century method of heating and air conditioning."

John McGregor of Nashville, Tenn., who bought a heat pump over two years ago to replace an existing system and add complete air conditioning, indicated that he likes the unit's "low operating cost."

What doesn't he like about it? "Supply air at register not uniform in temperature." Would he buy a heat pump if he had to do it again? "Yes."

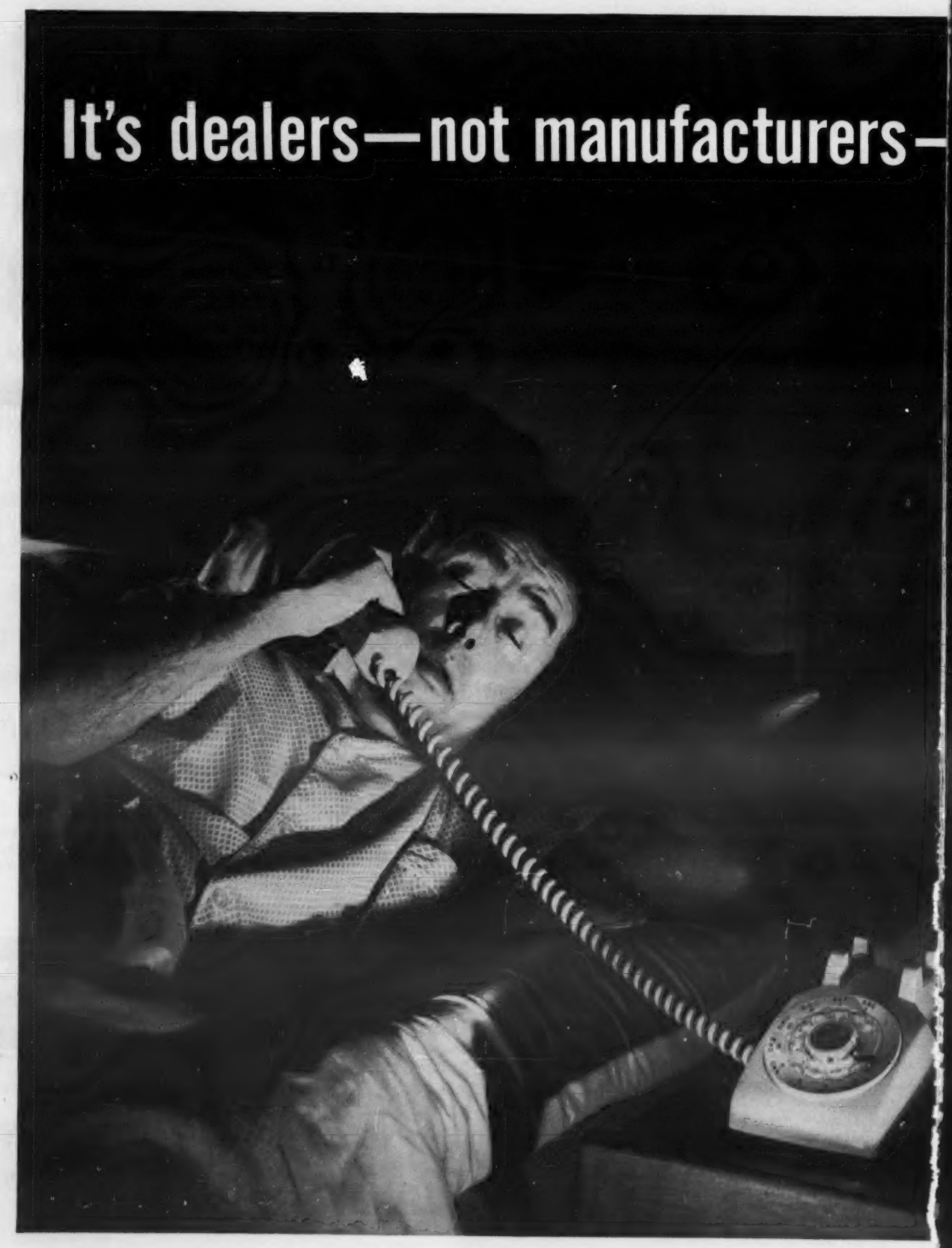
But these people's satisfaction with the heat pump is not shared by some of the users who are living in the North.

And if the heat pump is to become a large-selling, mass-produced commodity, it must be accepted in the populous areas of the North—for example, in the Midwest. Industry interest in user reaction in this area, therefore, should be particularly high.

Several users of heat pumps in Ohio have provided some revealing information on their experiences with this product. Experiences of Ohio residents are especially significant since this midwest state already has about 3% of the central heat pumps installed in the U. S., compared with nearby Michigan's less than ½% and Indiana's approximately 1½%.

Dr. A. Shaul of Ashtabula, who has had a 5-ton heat pump for three years, has found that the unit is "clean, uncomplicated, safe." (Incidentally, the

It's dealers—not manufacturers—



phrase "clean and safe" or a similar one was used by several homeowners, which perhaps indicates the effectiveness of heat pump promotional material.)

Asked what he doesn't like about the heat pump, Dr. Shaul told the NEWS: "Noisy; inefficient below 35° without resistance heat. This makes for expense in a big house."

"The noise" was cited by another Ohio user, LaVern Erichson of Willoughby, who also has had a 5-ton unit for three years.

One heat pump manufacturer has acknowledged that the noise level of the circulating air "is of course slightly higher than for other forced-air systems." "However," this producer contends, occupants of particular heat - pump - equipped homes "easily became accustomed to this and have not complained about the noise level."

On the plus side, Erichson likes the "dual function" feature of the heat pump.

Dr. Manny Grossman of Shaker Heights listed "clean, even heat" and "air conditioning is excellent" as good points of his 5-ton heat pump which he has had for about three years."

But, like Dr. Shaul, he complained that "In severe cold weather—below 30°—it is hard to keep the house warm. Operational cost is much too high. . . ."

In Eastlake, Ohio, Al Schaefer has found his 3-hp. heat pump — installed about 4½ years ago, is "clean and safe" and keeps his home "comfortable."

However, he, too, has some gripes: "Pump does not operate during mild periods, therefore no dehumidifying," he told the NEWS. He also said the unit is "not as automatic as purported. We keep circulating fan going in mild weather."

One Ohio user, John Revelt of Olmsted Township, figuratively burned up the NEWS survey form in recording his complete disgust with his installation. He charges that the product was misrepresented.

Revelt has had a heat pump "three years and three years too long." What does he like about it? "Not a darn thing." And, he claims, his home was designed for a heat pump installation.

How did these Ohioans happen to buy a heat pump? Some answers: "Always wanted one." "Utility company salesman and magazine articles." "Research in heat engineering through magazines."

Would they buy a heat pump again? Replied the owner of a 5-ton unit: "Only if a larger unit were manufactured."

Another answer to this question was: "Not this far North. The load on the machine seems to be too great for the house size although the system was designed for the heat pump unit installed.

"If the cycle can be improved to the point of more reliability, they will have something. . . . We must keep our fingers crossed whenever the cold weather starts, waiting for the machine to fail when we need it most."

'Operating Costs Too High For All But Top 10%'

A third user replied: "No—yes, if I was in an income bracket where operational cost was not a factor. This would be the top 10%."

Another said yes, he would buy a heat pump again. But still another exploded: "Hell, no!"

But the geographical factor is not always the deciding one in like or dislike of the heat pump. For instance, Mrs. John Sheidler of Rt. 1, Mt. Cory, Ohio, testified: "With our heat pump systems we've fresh, filtered air all year-round. No matter if it's hot or cold outside, the interior of our home is always just right."

Then, over, in Chicago, G. D. Wetherbee, who has had an assembled, 3-hp., belt-driven unit operating in his home since October, 1952, testified that his heat pump "is just about perfect. There is nothing which we do not like." He installed the unit because of "technical interest" and would "definitely" buy another.

And from Providence, R. I. came this report by Elwin E. Linden: "The family has experienced a high level of comfort from (our) system. The low temperature warm air heating system has been delightful in the wintertime and the cooling and dehumidification operations in the summertime have provided truly year-round comfort."

Operating Cost Details

What about operating costs and service? These, of course, are matters of great concern to heat pump users, as is unit reliability.

Some of the operating cost figures obtained by the NEWS represent the users' total electric bill and are reported for what value they may have.

One such report comes from Dr. Burnett of Elloree, S. C., whose total electric bill (including water, cooking, lights, etc.) for one year was $277.85. The monthly figures ranged from a low of $14.65 to a high of $38.87.

Also in the same state, W. M. Dickson of Marion offered some figures on cost of operating the heat pump in his 1,400-sq. ft. house. Saying he found the unit "most efficient and economical," Dickson stressed that "the remarkable thing" is "its inexpensive operation" as shown by a test meter for a five-month period. He gave these figures:

June 10, 360 kw	$ 5.95
July 10, 690 kw	10.55
Aug. 10, 700 kw	10.60
Sept. 10, 550 kw	8.45
Oct. 10, 400 kw	6.25

"An average of these figures shows a cost of just over $8 per month for use the entire summer," he pointed out. He also noted that "we are camellia fanciers and our water bills in previous years have run more for watering the plants alone than our entire cost of operation for cooling and heating."

W. R. Willauer of Sullivans Island, S. C., said his electric bills for the April-June period before he bought a heat pump averaged $15.44. This was for a home with 5,840 sq. ft. of floor space and 10-ft. ceilings.

For the following July-September period his electric bills averaged $20.82 a month "with air conditioning and humidity control—an increase of $5.38 a month for this added comfort."

Willauer also reported that his electric bills for a three-month period in the winter before purchasing a heat pump averaged $16.66 per month, "during which we also consumed

(Concluded on next page)

—who get called out at night

The manufacturer sleeps snugly—all night long—although the Smiths may call *you* at 2 A.M. Their furnace has stopped running, it's miserably cold outside—and the baby is sick. Who crawls out of bed, makes the hurried service call in the pre-dawn darkness? Not the manufacturer!

An awareness of this fact shapes the product and policies of Lennox. It's one of the reasons you, the dealer, are recognized as the most important person in the entire organization.

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Heat Pump User Survey--

$111.30 worth of fuel oil.

His electric bills for the following October-December period averaged $19.50 per month, "making an average increase of $2.84 a month. And no fuel oil expense. Also perfect humidity control."

Heat Pump Turned His Home Into a Palace

Pointing out that the December referred to was "very cold," he indicated that the heating job done by the heat pump was "the very essence of comfort." The heat pump, he enthused, turned his home into "a palace."

Another satisfied user, John McGregor of Nashville, in reporting purchase, operating, and service cost figures, noted that his 3½-ton heat pump was installed in an existing home. Also, he indicated, he spent $250 for extra insulation and storm windows and doors.

Total installed cost of his heat pump (excluding insulation) was $1,950 including change in main line service, McGregor said. Of this total, $1,050 went for the heat pump itself.

McGregor said it costs him $89 per heating season to operate the heat pump, with his highest monthly heating bill being $25.89. He indicated that his heating cost is approximately 25% lower than with coal, which he formerly used.

In answer to another question, McGregor replied that he had spent $32.50 on service and parts since obtaining the heat pump. He noted that this was exclusive of $50 included in the price of the heat pump for first 12 months' warranty service.

He also indicated that the unit required more service in winter than in summer and that the service has been prompt and fairly efficient.

LaVern Erichson of Willoughby, Ohio, reported that he spent $300 for insulation for his new home when it was equipped with a 5-ton heat pump. Total installed cost of the heat pump, excluding insulation, was $3,100, he said, of which $1,700 was spent for the heat pump itself.

He listed his heating-season cost as $285 and his highest monthly heating bill as $75 including other services. He had spent nothing as of last June on service and parts.

Dr. Grossman in Shaker Heights, Ohio, said his 5-ton heat pump was installed in a new home in which extra insulation was used at a cost of $150. He reported his total installed cost of the heat pump as $5,300 and the cost of the heat pump alone as $2,200.

According to Dr. Grossman, it costs him $600 per heating season to operate his heat pump, with his highest monthly heating bill being $125. The unit requires more service in winter than in summer and the service is prompt and efficient, he indicated. He said he had spent $100 on service and parts since obtaining the heat pump three years ago.

Al Schaefer of Eastlake, Ohio, gave $2,200 including duct as the total installed cost of his 3-hp. heat pump. He said he spent $1,600 of this for the heat pump.

Asked when the unit requires more service—in winter or in summer—Schaefer replied that there is no significant difference. He had no complaint on promptness or efficiency of service.

Another report, from the home of John Sheidler, Rt. 1, Mt. Cory, Ohio—a house containing 3,600 sq. ft. including basement—put the total cost for heating and cooling in one 12-month period as $450.

G. D. Wetherbee in Chicago informed the NEWS that it costs him $175 per heating season to operate his assembled, 3-hp. belt-driven unit. He indicated that no extra insulation was put in the existing home when the heat pump was installed. Wetherbee said his heating cost is "as cheap as gas, cheaper than oil."

Since 1952 Owner Has Spent Only $25 on Service, Parts

This user has had his heat pump since the fall of 1952. Since then, he says, he has spent about $25 on service and parts. The unit requires more service in summer than in winter, he added, and service is good.

Seven of the residential heat pump users from whom the NEWS obtained reports answered the questions: Do you turn down your thermostat at night? Were you told the effect of this practice on operating costs?

Three answered no to the first question and yes to the second. Another replied that he turned down the thermostat at night but that "this is insignificant." Still another doesn't lower the thermostat at night and added: "Recovery is too slow for turn down."

One user sarcastically commented: "We don't get heat with it on full. How could we turn it down?"

Another said that he turns down the thermostat at night and that operating cost thus is "a little less."

From Elwin Linden came this report on operating cost of the heat pump system serving his home in Cranston, R. I., a suburb of Providence:

"No major troubles have developed with this equipment and only minor maintenance is required, such as oiling the bearings on the fan and the fan motor, keeping the air filter clean, and periodically cleaning the water strainer.

Heating Costs about Same as Gas or Oil

"From operating experience, we are fairly well convinced that it costs about the same to heat the house with the heat pump as it would cost with either gas or oil.

"This figure is in the order of $225 a year for what amounts to 14,000 cu. ft. of living space. Cooling and dehumidification would run from $25 for a cool, dry summer to $75 for a hot, humid summer.

"The equipment has required no service calls and the maintenance mentioned above I have done myself quite easily.

"The heat pump carries a five-year guarantee on the compressor and other major components and if the machine operates approximately 2,000 hours a year and has a life expectancy of perhaps 10,000 hours, then the compressor will be about due for an overhaul at the end of the guarantee period; and this overhaul should be good another five years."

NEWS readers are invited to write to the editor giving their opinions on any subject of interest to the industry.

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Big-space ads in national magazines including THE SATURDAY EVENING POST, newspapers, and radio are telling your customers about the advantages of FRAM permachem treated Air Filters. Merchandising aids featuring FRAM permachem treated Air Filters are being used by original equipment manufacturers and are available to you.

"You've never made **such profit** from air filters before," says Theodore F. Low, President of Sims Corporation, Providence. "You can't miss with Fram's profitable pricing policies, selective distribution, merchandising support, and Fram's famous money-back guarantee."

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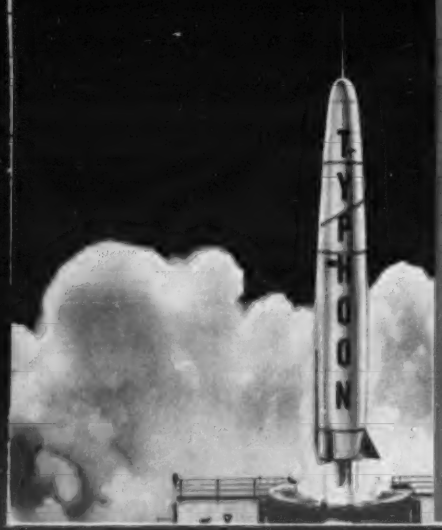

TYPHOON UNITS HAVE UNLIMITED FLEXIBILITY

You'll never miss a sales opportunity — because Typhoon units have unlimited flexibility. They can be customized to meet every requirement, solve every problem. Options in air discharge, control location, and piping connections are just a few examples of Typhoon's unique ability to tailor-make the unit for the job. And this Typhoon exclusive customizing doesn't skyrocket the price — you always come in with the right unit at the right price, a really competitive one! This combination—Typhoon versatility and Typhoon engineering know-how — makes every home, factory, store and office a live prospect. In fact, it guarantees you the opportunity to close every sale!

Sales skyrocket with OPERATION MOONSHOOT because no matter who you're selling to — or against — Typhoon gives you exactly the right unit for every installation. See the center spread of this insert for the full Typhoon "Galaxy" Line for 1960.

Air or water cooled, ceiling units, floor units, units that go indoors, outdoors, on roofs, in basements, through walls, split systems, plus the amazing new heat pumps, and furnaces...you make the sales contact — there will be a Typhoon unit to exactly meet the need.

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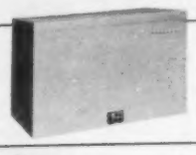
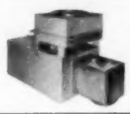
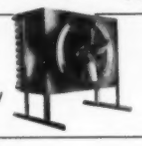
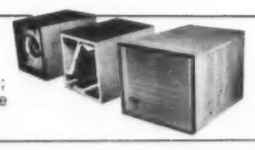
THE TYPHOON GALAXY LINE

UNITARY AIR CONDITIONERS

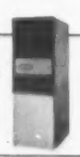
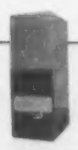
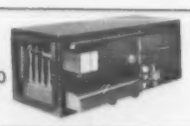
TYPE	SERIES DESIGNATION	MFG. LOCATION	NOMINAL TONNAGE RATING													
			2	3	5	7½	10	15	20	25	30	40	45	50	60	75
SC Series; Capacity Range 3-75 tons — WATER COOLED SELF CONTAINED	SC	BROOKLYN		O	O	O	O	O	O	O	O	O	O	O	O	O
CMU Series; Capacity Range 5 & 7½ tons — WATER COOLED CEILING MOUNTED	CMU	BROOKLYN			O	O										
 HS Series; Capacity Range 3-60 tons — WATER COOLED REMOTE CONDENSING UNITS	HS	BROOKLYN		O	O	O	O	O	O	O	O	O	O	O	O	
LSU Series; Capacity Range 3-15 tons LS Series; Capacity Range 3-60 tons — AIR HANDLING FAN-COIL UNITS	LSU	BROOKLYN		O	O	O	O	O								
	& LS	BROOKLYN		O	O	O	O	O	O	O	O	O	O	O	O	
ACCU Series; Capacity Range 3-20 tons TAR Series; Capacity Range 2-3-4-5 tons — AIR COOLED REMOTE CONDENSING UNITS	ACCU	BROOKLYN		O	O	O	O	O	O							
	TAR	CLEVELAND	O	O	O											
TAS Series; Capacity Range 2-3-5 tons ACSC Series; Capacity Range 3-20 tons — AIR COOLED SELF CONTAINED	ACSC	BROOKLYN		O	O	O	O	O	O							
	TAS	CLEVELAND	O	O	O											
RMU Series; Capacity Range 7½ & 10 tons  — ROOF MOUNTED SELF CONTAINED **COMBINATION COOLING-HEATING**	RMU	BROOKLYN				O	O									
ACCB Series; Capacity Range 3-15 tons TAC Series; Capacity Range 3-100 tons  — AIR COOLED CONDENSERS	ACCB	BROOKLYN		O	O	O	O	O								
	TAC	BROOKLYN		O	O	O	O	O	O	O	O	O	O	O	O	O
WC Series; Capacity Range 2-75 tons — WATER CHILLERS SELF CONTAINED	WC	TAMPA	O	O	O	O	O	O	O	O	O	O	O	O	O	O

HEAT PUMPS

← TEAR ALONG PERFORATED LINE

TYPE	SERIES DESIGNATION	MFG. LOCATION	NOMINAL TONNAGE RATING — COOLING CYCLE																	
			2	2½	3	3½	5	6	7½	10	12	15	20	25	30	40	45	50	60	75
H Series; Capacity Range 2½-45 tons AH Series; Capacity Range 2½-7½ tons — WATER-TO-AIR **SELF-CONTAINED AND SPLIT SYSTEMS**	H & AH	TAMPA		O		O	O	O	O	O	O	O	O	O	O	O				
WW Series; Capacity Range 2½-75 tons — WATER-TO-WATER	WW	TAMPA		O		O		O	O	O		O	O	O	O	O	O	O	O	O
TAS Series; Capacity Range 2-3-5 tons — AIR-TO-AIR SELF-CONTAINED	TAS	CLEVELAND	O		O		O													
A Series; Capacity Range 3-30 tons TAR-HS Series; Capacity Range 3 & 5 tons  — AIR-TO-AIR SPLIT SYSTEMS	A	TAMPA			O		O		O	O		O	O	O	O					
	TAR-HS	CLEVELAND			O		O													

FURNACES

TYPE	SERIES DESIGNATION	MFG. LOCATION	GAS-INPUT RATINGS (BTU/HR)								OIL-OUTPUT RATINGS (BTU/HR)					
			75	80	100	120	125	150	175	200	84	96	100	112	123	140
TM-X & OMT-X Series; Capacity Range 75,000-125,000 BTU/HR — UPFLOW BUILDER SERIES	TM-X & OMT-X	CLEVELAND	O		O		O				O		O			
TMC-X & OCT-X Series; Capacity Range 75,000-150,000 BTU/HR — COUNTERFLOW BUILDER SERIES	TMC-X & OCT-X	CLEVELAND	O		O		O	O			O	O				
TM & OMT Series; Capacity Range 75,000-200,000 BTU/HR — UPFLOW DELUXE SERIES	TM & OMT	CLEVELAND	O		O		O	O	O	O	O		O	O	O	O
TMC & OCT Series; Capacity Range 75,000-150,000 BTU/HR — COUNTERFLOW DELUXE SERIES	TMC & OCT	CLEVELAND	O		O		O	O			O	O				O
TM-Y & OMT-Y Series; Capacity Range 100,000-200,000 BTU/HR  — UPFLOW EVEN-TEMP SERIES	TM-Y & OMT-Y	CLEVELAND			O		O	O	O	O	O		O	O	O	O
 TMC-Y & OCT-Y Series; Capacity Range 84,000-150,000 BTU/HR — COUNTERFLOW EVEN-TEMP SERIES	TMC-Y & OCT-Y	CLEVELAND			O		O	O			O	O				O
TGH Series; Capacity Range 80,000-150,000 BTU/HR  — HORIZONTAL	TGH	SAN CARLOS		O	O	O		O								

YOU'RE AT THE CONTROLS IN OPERATION MOONSHOOT!

★ Typhoon backs its distributors and dealers with the products, the know-how, the pricing... with all the selling help you can think of! But you're the fellow who guides the hi-powered OPERATION MOONSHOOT. Where you go—and how fast you get there—is up to you. The sky's the limit!

★ Selling Typhoon, you'll have more positive product advantages to sales-talk. You'll zoom right by your competitors every time there's a tough installation problem, or a tight delivery deadline. Remember—you're the fellow who sells the most versatile air conditioning equipment on the market...equipment that's practically custom-built, yet competitively priced!

★ Typhoon puts at your call the industry's best trained, most imaginative ground crew—engineers and technicians with years of know-how. When you have a tough problem, Typhoon gives you the solution...fast.

★ To get in on OPERATION MOONSHOOT—to zoom into the high profit orbit—contact Typhoon today. You'll get the full story on the soundest air conditioning line in America!

★ Write today for full details on a Typhoon franchise. And your free copy of the new 20" x 28" Reference Chart on the complete Typhoon line.

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DIVISION OF HUPP CORPORATION

TYPHOON AIR CONDITIONING
505 Carroll Street • Brooklyn 15, New York
DIVISION OF HUPP Corporation

Printed in U.S.A.

Inside Dope

By GEORGE F. TAUBENECK

(Concluded from Page 1, Col. 1)

But not only people. Events made it what it was. But events are only milestones. Probably nothing so captures the spirit of an era—the noises, large and small, that belong to one time . . . and to one time alone.

"Did the Roaring Twenties really roar? Well, yes—in a manner of speaking . . . but the roar was a mingling of many other sounds.

"The sound of the Twenties was a gurgle (GLUG-GLUG-GLUG)—when Andrew Volstead forced a man to pour grain alcohol into a bathtub. It was laughter—at the jibes of a rope-twirling Oklahoma cowboy. It was bat meeting ball . . . the sputter of a flivver . . . the new voice called radio . . . the wail of a horn.

"They were happy sounds—most of them—these sounds of the Twenties . . . with only one discordant note. They called it a crash. . . .

"Then came the Thirties—troubled years. Again the sounds reflected the mood of our times . . . the stillness of idle factories . . . the shuffling feet of idle men . . . a lonely wind in the dustbowl . . . thunder over Nuremberg ('SIEG HEIL!') . . . the scream of Stukas over Poland.

"The Forties that followed brought with them new sounds . . . the hum of the Arsenal of Democracy . . . an explosion that shattered the calm of a Sunday morning . . . the sound of marching men . . . and a noise that seared the air over Hiroshima.

"The lights went on again all over the world . . . and in America promptly went out again as a new kind of entertainment filled darkened living rooms.

"The Fifties—we remember them best because we are closest to them. The sounds of the Fifties—what were they? The voice of suburbia—the power mower . . . rock-and-roll—music they called it . . . Jules Verne sounds from Cape Canaveral . . . the beep of Sputnik . . . the burble of Mr. K.

"So we come to the Sixties. What are the sounds of the decade that starts in 1960? Some of them we know for sure.

"The sound of the Sixties is a wedding march. Eleven million families will be formed—compared to eight million in the Fifties.

"The sound of the Sixties is a baby crying. Fifty-two million babies will be born in the next decade—compared to forty million in the Fifties.

"The sound of the Sixties is a saw. Fifteen million new homes will go up across the land at an average annual rate of $28 billion dollars by 1970.

"The sound of the Sixties is a school bell ringing. New facilities must be provided for 12,500,000 more students of all ages than we have today.

"The sound of the Sixties is a cement mixer . . . $81 billion worth of new highways will be constructed over the next ten years — compared with $38.5 billion in the Fifties.

"The sound of the Sixties is a factory whistle. Capital investment in new factories and equipment will soar from $48 billion in 1958 to $85 billion by 1970.

"The sound of the Sixties is a fork-lift truck. Gross national product will rocket from $465 billion in 1959 to $740 billion by 1970.

"We in America will increase our production of goods and services over the next ten years in an amount equal to the total present output of West Germany and the Soviet Union combined!

The sound of the Sixties is a rivet gun. $440 billion worth of new commercial and industrial construction will go up in the next decade—or a figure equal to the value of every such structure standing in America today. This compares with $250 billion worth in the Fifties.

"The sound of the Sixties is an auto horn. Nine million new cars a year will be coming off production lines by 1970, compared to a rate of six million cars in 1959.

"The sound of the Sixties is an outboard motor. $100 billion a year will be spent for recreation and travel by 1970—compared to $48 billion in 1959.

"The sound of the Sixties is a blast furnace. 9,700,000 tons of steel a year will be produced by 1970 — compared to 6,000,000 tons in the boom year of 1959.

"The sound of the Sixties is a dynamo. By 1970 Americans will be using 1.5 trillion kilowatt hours of electrical energy a year —compared to 600 million kw. hours in 1959.

"Yes, and the sound of the Sixties is hard cold cash. 1970 Americans will have $180 billion more money to spend than they had in 1959—that is, $180 billion after taxes.

"Or putting it another way . . . the average family—yours and mine—will have $1,650 more disposable income a year with which to enjoy the good things in life.

"What do they all add up to—these sounds of the Sixties?

"Just this: the most explosive decade in the economic history of our nation is straight ahead. And the next sounds you hear—the sounds of air conditioning on the march—will help you make the most of it!"

Eloquent, eh? Classic, too.

Lucky Fellow

"I never get excited about any crisis until one hour later. Often the problem solves itself within that time," declares Irvin Secord, Sales Manager, Drayer-Hanson.

This guy is lucky. Our crises don't seem to go away that quickly when we ignore 'em.

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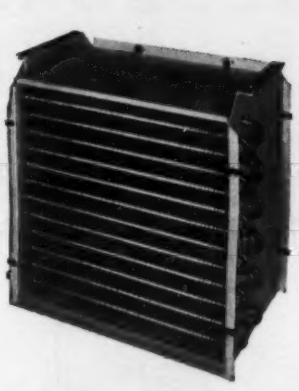
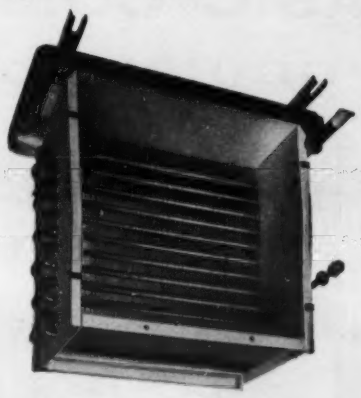
NEWS readers are invited to write to the editor giving their opinions on any subject of interest to the industry.

The Inside Story of **LARKIN** Quality

These photographs, made at various stages of production, show why LARKIN Humi-Temps are favored throughout the nation.



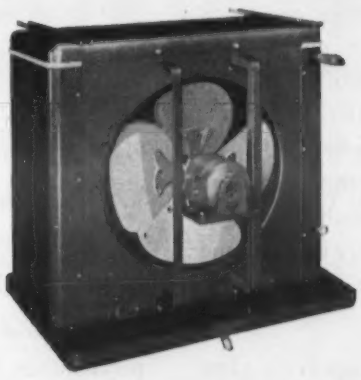
Original patented Larkin cross-fin coil with aluminum fins and staggered electro-tinned copper tubes set firmly in rigid aluminum frame. Coil has been cleaned, dehydrated, and all connections sealed to keep them moisture-free.



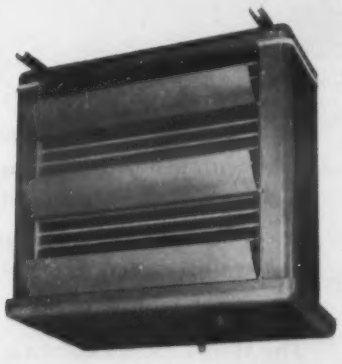
Die-stamped aluminum top, which has been etched and painted blue, with slotted steel hanger bars added. Rubber collars around lines minimize vibration from case. Note air blockers at bottom and top of case eliminating bypassed air.

Aluminum panels, painted blue, are attached with airplane-type, vibrationless, permanent fasteners. (No metal screws are used.) Rubber moldings deaden sound transmission between panels, and add to the attractive appearance of unit.

Quiet-running, slow-speed motors are rubber mounted on universal adjustable base and are equipped with thermal overload protection. Models MT-25 (2500 BTU @ 10° F TD) through MT-106 have one fan. MT-135 through MT-320 have 2 motors and fans.



Insulated non-sweat drip pan extends past back of unit and catches condensate from expansion valve. Properly balanced humidities and more-even temperatures reduce operating costs, minimize losses from dehydration, provide highly efficient operation year in and year out.



Unit is finished with addition of adjustable louvers. Quality Control Department thoroughly inspects every unit before it is shipped to customer. Wherever the name LARKIN appears, it is your assurance of finest quality.

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WATCHDOG OF THE NATION'S FOOD AND COMFORT

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Where and How Defense Department Uses Air Conditioning

By Thomas R. Casberg,
Mechanical Engineer In Charge of Air Conditioning, Office of Asst. Secretary of Defense for Properties and Installations

This is the conclusion of a three-part report of the speech by Thomas R. Casberg before the Special Conference Session at the 11th ARI Exposition in Atlantic City last month. Other instalments appeared in the Nov. 23 and 30 issues of the NEWS.

(Concluded from last week)

Our use of the 67° F. wet bulb has also caused much comment. It was picked for several good reasons. It is a simple criterion which is easily understood. This is important when dealing with layment especially in the Comptroller's Office.

Equally important was the availability of data at this point. Extra funds were not spent to compile new data. The wet bulb is a measure of total heat and so we agree with Mark Twain that "it ain't the heat, it is the humidity."

We consider the desert area of the Southwest to be a different problem and use evaporative cooling in this section of the country unless close control of humidity is required and then we use mechanical refrigeration, of course. We have recognized a climatic anomaly in southern Arizona where a high wet bulb requires the use of mechanical refrigeration even in housing.

We do not issue a map because it would be inaccurate and misleading. A difference of 15 or 20 miles can often account for substantial differences in climate. This is especially true near mountain ranges and rivers. We insist on weather data compiled and issued by meteorologists and on their advice use a minimum period of record of five years.

The objective of the Department of Defense policy is to obtain the best systems at the lowest costs consistent with long term maintenance and operational costs. We believe the maintenance and operational costs are quite important. The increasing requirements of our steadily aging facilities indicate that less, not more, of the maintenance and operation budget will be available to add systems to existing buildings.

For this reason I believe neither the industry nor the DoD benefit from so-called "low first cost jobs" which have high long-term maintenance and operation costs. The funds for next year's new system in another building will be consumed by the M&O hog which was sold to us with a low price tag as camouflage. At this time when we are adding air conditioning at a very rapid rate it is important that we consider M&O costs five, 10, and even 20 years from now.

Why DoD Prefers Central Systems

Associated with the objective of low cost long-term maintenance and operation is another widely discussed segment of our policy—the use of central systems and the prohibition of multiple units.

All of our studies and all data we have obtained from the industry indicates that only a central system is capable of quality air conditioning coupled with long-term low cost maintenance and operation. Walter Reed hospital in Washington, D. C. was an example of the wastefulness of multiple units.

At one time there were 832 separate condensing units in this building complex. About 37 different manufacturers were represented. When I talked with the maintenance foreman about spare parts a wild look came into his eyes. The Commanding Officer expected him to be able to make emergency repairs on practically all of the units and the supply system would not keep an item in stock if there was no activity for six months.

As a side point, it is interesting to note that some of the most critical areas are not concerned with people but with animals. A failure of the air conditioning for the monkeys could ruin months of research work. A central system is now being installed.

DoD Policy Does Not Prohibit Room Units

It has been stated that the DoD policy prohibits room coolers and packaged units. This is not true. We have many installations of each. Many houses have only one bedroom cooled and this is logically accomplished by a room cooler.

There are many small offices in non-conditioned facilities such as warehouses and automotive shops where room coolers are used. The Department of Defense has countless small buildings where a single package unit, either DX or chilled water, is the central system for the building.

There are also examples of two or three systems in a facility instead of a central system but these are exceptional cases. It is believed that each project should be studied separately and sound engineering applied. When exceptions are really necessary, the policy provides for such unusual cases.

Asks ARI Help on Several General Problems

There are several general problems confronting us at this time which I would like to present with the hope that the ARI can help. It is my opinion that the solution will benefit industry as well as the Department of Defense. Most if not all of the solutions apply equally to similar non-military problems.

Spread of Disease In Hospitals

Hospital air conditioning and the prevention of the spread of infectious organisms by such systems is a very important current problem. A solution is needed not only for new hospitals but indications are that modifications are needed in exist-

Unquestionably the most complete line of air conditioning compressors in the industry. Tecumseh product development offers new pancakes with major price savings, compactness, top capacity and greater flexibility in the design of machine compartments. Your choice from among these 23 basic compressors should pinpoint your specific job requirements.

The Model AR26 Pancake is the answer for a low cost, small size, lightweight compressor for Portable air conditioners.

The new AU Pancake Series expands this popular shell design to a line of 1 HP compressors including 7½ and 12 amp models. Two 1 HP single cylinder compressors are offered which can also be used for heat pump applications.

A complete line of twin cylinder models starting at 1 HP includes a 7½ and a 12 amp model, and the biggest capacity Twin on the market.

Within these models, variations in mounting parts, tubes, electrical characteristics, etc. are available. Whatever your requirements may be, the Tecumseh line of Air Conditioning Compressors will meet them and serve you better in every application. Investigate today.

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ing hospitals. *Time* magazine of Oct. 12, 1959, pointed out that hospitals are now the major source of fatal infections. The people of Houston will not forget last year's tragedy when a number of infants died in one sweep of a hospital originated infection.

The medical profession has used the term "fearful epidemics" to describe the results of lack of control of antibiotic-resistant organisms such as staphylococci in hospitals. Medical authorities, both military and civilian, are blaming air conditioning systems for part of the problem.

An AP report from Detroit in the Sept. 13, 1959 papers quoted Dr. W. N. Glas, director of surgery at Wayne County General hospital, as saying, "steps must be taken to prevent the spread of infectious organisms by hospital air conditioning systems." The problem is partly cleanliness.

It must be emphasized that the A-E is quickly forgotten but your nameplate is permanently attached to your equipment and could be the object of a never-ending verbal abuse. Frequently the base commander and other senior officers live in these houses and being laymen in air conditioning, associate the troubles with your nameplate. You don't want that kind of reputation.

Many fine pieces of equipment are damned because of poor application. Noisy and improperly placed grilles and ducts, poor thermostat locations, undersized or blocked cooling towers, poor access for maintenance, and many other design failures of omission and commission can reduce the value of good refrigeration equipment.

The matter of access for maintenance is important to all. Unfortunately, there is housing at a southern base where the first requirement for the maintenance man is that he be no larger than a jockey. To get to the unit he must parade through the house, through the master bedroom, empty the storage closet of a few chests, bags of golf clubs, and portable sewing machines, get down on his knees and crawl through a hole.

To replace a cycle it is necessary to take down a living room wall, but fortunately the architect realized this and the wall is a special movable one attached with screws. It is probable that this unit will not be properly maintained and one may suspect any undue or early failures will eventually be to the discredit of the manufacturer.

You can help yourself by helping us. We need strong representation to architects and engineers in the correct manner to apply your equipment. Not just individual pieces of equipment but the combination of all items which make up a system. This is not a plea to do the design work but it is a plea to work closely with A-E's and insist on the elimination of known application errors. A good system must be built up with properly matched components properly applied.

The Department of Defense requires a large amount of air conditioning. To hold this part of defense spending to the minimum it is imperative that our systems be simple, rugged, and effective. In this effort the Department of Defense is hopeful for the continuing support and assistance of the Air-Conditioning & Refrigeration Institute.

(The End)

License Colorado Firm

BURLINGTON, Colo. — C. L. Humphrey has been issued a new store license to do business as Humphrey Refrigeration Service, 1699 Rose Ave. here.

Wm. E. Hoctor Joins Westinghouse Cooling Division

STAUNTON, Va.—William E. Hoctor has joined Westinghouse Electric Corp's air conditioning division here as manager of manufacturing, it was announced by R. K. Serfass, division manager.

W. E. Hoctor

Hoctor was formerly associated with the motor and control division of Westinghouse at Buffalo, where he was general foreman. In his new position, he succeeds Burr Tupper, who has become director of works engineering at Westinghouse headquarters in Pittsburgh, according to the announcement.

100% Outside Air Proves Too Costly

It seems to be necessary to be able to get in, around and behind any air conditioning equipment in patient rooms in order to scrub, wash with chemicals or perhaps steam the equipment. So far the only suggestion is merely an evasion. The proposal is 100% fresh air for the entire hospital through a double duct system. The industry is much more ingenious and can recommend a better solution which is reasonable in cost.

ARI Certified Program Aids Government Agencies

The present ARI certified program is good and very helpful not only to Department of Defense but to all Government agencies. Major General Minton, director of civil engineering of the Air Force, has spoken highly of the program. In the near future the Air Force will probably include ARI certification in their specifications for family housing.

At the Air Force air conditioning conference in July, General Minton expressed the hope of the Air Force that the certification program would be substantially expanded to include heat pumps, larger units, components, and related equipment. Such an extension of this program would be beneficial to the entire Defense Department and it would be encouraging to hear of such plans.

The industry can provide much needed assistance in the big problem of design criteria. Many of you are probably thinking that you are not involved in this problem. I hope to show you that you are surrounded by it. The air conditioning of family housing is a good example.

Manufacturers Being Blamed for Poor Application

The practice in the Capehart housing program is to engage local architect-engineers for each base. It has been noted that not too many A-E firms have had experience with house air conditioning. Many times there is plenty of architecture but not much engineering. As a result there are troubles.

HERE'S WHY SO MANY ENGINEERS SPECIFY

Phelps Dodge Copper Tube for refrigerating, air conditioning and heating units!

1 Phelps Dodge has complete control of its copper tube from original source to finished product. The copper used in Phelps Dodge tube comes from Phelps Dodge-owned open-pit mines, is smelted in Phelps Dodge refineries and fabricated in modern Phelps Dodge mills. This overall Mine-to-Market control is assurance of highest quality and finest workmanship.

2 Phelps Dodge devotes particular attention, throughout fabrication, to uniform anneal for tube flaring and careful control of die draw for close tolerance.

3 Phelps Dodge can supply maximum tube lengths and precise wall thicknesses engineered to customer specifications; straight length tube tempered to meet bending and expanding requirements.

4 Phelps Dodge multiple mill operation guarantees a steady source of tube supply to meet the needs of manufacturers of refrigerating, air conditioning and heating equipment.

It's the famous Mine-to-Market Quality Line . . . sold the quality way—through authorized wholesalers!

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PD

Typhoon Announces 4-Point Program To Help Its Distributors Exploit Market

BROOKLYN — Preparing to take advantage of the boom that economists are predicting for the 1960's, Typhoon Air Conditioning, division of Hupp Corp., has announced developments which "have practically given a new face to the division's marketing program." They include:

1. Initiation of a new distribution development department "to help each distributor exploit the full potential of the markets available to him."

This department is headed by Jack Robinson, formerly director of the industry-wide SMAC (Sell More Air Conditioning) program.

2. Expansion of sales efforts directed toward chain store operators and other national companies.

Increased activity in this department, under the direction of Edmund Seergy, "has already produced spectacular results; orders for 1960 are more than double those of a year ago," according to the company.

Expansion of Distributor Training Program

3. Expansion of distributor training programs.

The company has employed a service engineer—Murray Grodner—with broad experience in teaching air conditioning in several schools. He will direct a new program that includes new manuals on installation and servicing of Typhoon equipment and a series of practical courses at Typhoon headquarters for personnel of distributor organizations.

4. Expansion of Typhoon's product line to include not only a larger number of products made at the division's Brooklyn plant, but also to include products made at plants of other Hupp divisions.

It is the task of Typhoon's new distributor development program to build strong, thorough distribution throughout the country.

"The purpose in establishing this department," said John Gilbreath, Typhoon's vice president for sales, "is not only to obtain distributor representation in areas where we have not previously marketed our products, but to help our current distributors to a better job."

National Accounts

Regarding national account business, it was noted that an increasing number of Typhoon distributors are quoting the specifications set up by chain store and other nation-wide companies for installation of air conditioning equipment.

"Efforts to get our equipment used by chains controlling hundreds of installations have been quite successful," Gilbreath said, "but each time the particular chain has emphasized that we have done only half the job when the chain's headquarters agrees to specify Typhoon.

"There must be a distributor capable of installing and servicing the equipment before a sale can be made. Increasingly, our sales force has devoted its efforts to making the Typhoon national accounts program mean something to every distributor in our organization."

Dealers, Distributors Must Be Able To Service

With regard to distributor training programs, the company said that manufacturers must design products with service needs in mind and they must sell through distributors and dealers who can provide the service that will be needed.

To be thoroughly qualified to perform good service requires that the appropriate people in every distributor's organization be working with complete, up-to-date information and methods.

These were the reasons Typhoon gave for placing greater emphasis on distributor training.

Said Gilbreath: "The expansion anticipated for the '60's will more than ever depend on good service. In fact, service will be one of the major areas of competition."

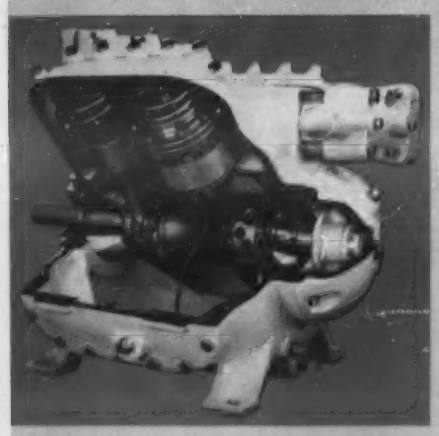
Courses Due In January

Typhoon will offer its first courses in installation and servicing of equipment in January. Priority will be given to distributors who have already requested such courses for service personnel, but the division plans to enlarge the program as necessary to include its entire distributor organization.

Regarding the firm's expanded product line, it was pointed out that Typhoon's catalog for 1950 listed nine air conditioning units. The list for 1960, the company said, includes 136 air conditioning products plus 49 gas and oil-fired furnaces.

"And these items include only the cataloged units," according to Murray Kabili, vice president for engineering. "Hundreds of possible factory and field adaptations make the line much longer."

THE COMPRESSOR FOR QUIET AIR CONDITIONING



Cut-away of B&G Compressor shows highlights of construction. All B&G Package Liquid Coolers and Condensing Units are equipped with this new-design compressor.

In the B&G Compressor, creative designing, plus precision manufacture, has established an entirely new standard of performance... smoother, quieter, with minimum vibration. This new conception of compressor design creates a unit basically superior because it is basically simpler.

The photograph above illustrates one of the precision manufacturing operations. A machine specially designed and built for the purpose bores and faces compressor crankcases with extreme accuracy. In fact, all the tolerances from one end of the compressor to the other add up to an incredibly small figure. All major parts are made in the B&G plant...resulting in a compressor unmatched for efficiency and smooth operation.

A B&G Compressor seldom needs servicing but when it does, usually all the parts needed can be carried in two hands. All units have *one* bore diameter...the piston and rod assembly and valve and cylinder assembly will handle 95% of all repairs.

Send for complete specification and application data on B&G Air Conditioning and Refrigeration Equipment.

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Canadian Licensee: S. A. Armstrong, Ltd., 1400 O'Connor Drive, Toronto 16, Ontario

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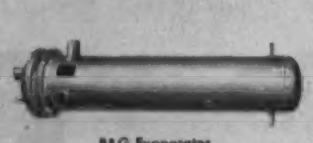

B&G Evaporator

B&G Centrifugal Pump

B&G Condenser

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JUNIOR MODEL

Automatically opens any Hermetic Compressor up to 14" in diameter. $397

STANDARD MODEL

Automatically opens any Hermetic Compressor up to 20" in diameter. $695

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862 Newark Ave., Jersey City 6, N. J.

Mix and Operator, Not Machine, Cause Most Service on Ice Cream Freezers

ATLANTIC CITY, N. J.— "Easily 50% of the service calls on dispensing freezers of soft ice cream and milk shakes are due to operational and mix problems, not mechanical," contends James H. Goodman, manager of customer service for Sweden Freezer Mfg. Co.

Mechanical problems do occur, but more often than not improper operation of the freezer and/or variations in quality of the mix cause the product to be less than satisfactory, Goodman told the Refrigeration Service Engineers Society at its 22nd annual convention here.

How Refrigeration System Varies

Refrigeration system used in such a freezer is basically the same as any other, he indicated, but an ice cream freezing unit does involve such special features as the dasher and freezing cylinder, solenoid valves for controlling mix and ice cream delivery, etc.

"The product must be pleasing to both sight and taste," Goodman emphasized, "and these factors depend almost entirely on the mix."

Main controlling elements in the mix, he explained, are butterfat, non-fat milk solids, sugar, and stabilizers and emulsifiers.

"While butterfat gives rich flavor to ice cream, it actually has little to do with quality," Goodman said.

Butterfat content in soft ice cream usually runs 4% to 6%, and 10% to 18% in hard ice cream, yet "you can get the same, rich taste from both," he declared.

This is due, he explained, to the fact that soft ice cream is served at a higher temperature and thus has fewer ice crystals to numb the taste buds.

Butter Churning Caused By Low Pressure Homogenization

"Only service problem involving butterfat," Goodman said, "is butter churning, which is caused by the mix not being homogenized at high enough pressure—3,000 to 3,500 p.s.i.

"Once butter churning starts, it's hard to stop. The only solution is for the operator to clean out the freezing cylinder thoroughly after about 4 to 6 hours' use, or preferably to get the dairy to homogenize at a higher pressure," Goodman asserted.

Content for non-fat milk solids in the mix is important in assuring a smooth texture, but their chemical composition can vary from area to area, season to season, or even from cow to cow.

Variation in the chemistry of the milk can cause protein separation, which may be confused with butter churning, Goodman indicated.

Sugar content can play a most important part in controlling the appearance and firmness of soft ice cream, according to Goodman. Generally the cheapest source of solids, too much sugar will lower the freezing point of the mix, too little will raise the freezing point.

"Soft ice cream should stand up firm at 20° to 22° F., the dairy industry has established," Goodman explained.

Thus, checking the temperature of the mix with a thermometer is most important in servicing, he said. If the mix is at the right temperature but is not firm or is otherwise unsatisfactory, the fault is not with the freezer but more likely with the mix or perhaps the way the freezer is operated, according to Goldman.

Small amounts of stabilizers and emulsifiers, .3% to .5%, are usually in ice cream mixes. These are sometimes added by the operator to improve texture, or, in the case of emulsifiers, to overcome to some extent poor homogenization.

An important thing to remember in connection with the operation of such a freezer, Goodman continued, is that the capacity of the machine can be exceeded in a rush period.

"Equipment is rated in gallons per hour, but this must be broken down to ounces per minute," he explained.

"For example, 22 gals. per hour equals three 16-oz. cups per minute. If the operator draws four cups per minute, then the product temperature will rise," Goodman pointed out.

"Operational problems are legion," he said. "Loading is critical, and never believe the operator. He'll lie in his teeth to you.

"Sanitation is very important, too. Everything else may be spotless, but sometimes the operator will use dirty containers to load mix into the machine," Goodman declared.

In answer to a question, Goodman explained how different quality product could be obtained from two identical ice cream machines using the same mix.

"If one machine is used more than the other because, say, it is handier for the waitresses, the product from the two machines may differ somewhat."

Answering another query, Goodman said that when a soft ice cream freezer is running at capacity, the back pressure should be about 1 p.s.i. above normal.

"If it's a few pounds under, you have an under-charge; if a few pounds over, the machine is over-charged with refrigerant."

ROTARY SEAL

Replacement Units

Available in a wide size range for Commercial, Semi-Commercial, Air Conditioning and Home Refrigerators.

EASY TO INSTALL ★ ECONOMICAL

AT ALL LEADING JOBBERS

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MUSKEGON PISTON RING CO.,
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AIR CONDITIONING and REFRIGERATION SERVICEMEN! DEALERS! CONTRACTORS!

WIN A GEN-U-WINE MOTH-EATEN MOOSEHEAD!

(Extra supply of moths upon demand)

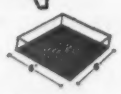
You, by gum, can be the FIRST in your neck of the woods to own this 100% priceless trophy . . .

BUT

If you win it and don't want it, you'll *have to* accept the alternate prize, which is a $500.00 U.S. Savings Bond . . . *much* less exciting from a real connoisseur's point of view.

Anyway, it's *your* decision to make . . . if you enter the big new contest sponsored by UCON Brand Refrigerants. The moosehead is the first prize. There are 65 (count 'em) 65 other jim dandy awards . . .

5 Second Prizes: A HEADLESS BEARSKIN RUG
(or a $100.00 U.S. Savings Bond)



10 Third Prizes: A 6 X 6 FOOT FROZEN NORTH LAND CLAIM
(or a $50.00 U.S. Savings Bond)

50 Fourth Prizes: A 100-LB. PACKET OF SOURDOUGH
(or a $25.00 U.S. Savings Bond, if you like your dough sweeter)

STAKE YOUR CLAIM NOW . . . HERE'S HOW! First, run like mad down to your nearest UCON Refrigerant wholesaler. When you've caught your breath, look for UCON IKE's picture on the special contest display, and whip out an entry blank. Complete the statement on the blank (in eleven words more or less), print your name and address (and the wholesaler's) on the blank . . . drop your entry in the box.

THE WINNING NAMES will be announced shortly after the contest's conclusion. If you're a winner, both you *and* your wholesaler will receive *duplicate* prizes. And even if you don't win one of the frabjous top prizes, you'll get a FREE UCON Refrigerants Tie Clip—the coolest thing that ever happened to a cravat. We mean, like, *nobody* loses!

CONTEST RULES
(The lawyer says we have to have them)
This contest is open to all air conditioning and refrigeration contractors, dealers and servicemen during the contest period: November 2, 1959 through January 30, 1960. Employees of Union Carbide Chemicals Company, Ansul Chemical Company, their subsidiaries and agencies are not eligible to enter the contest. UCON Refrigerant wholesalers are also ineligible—*but will be awarded duplicate prizes if their names appear on prize-winning entries.* Winners will be announced by mail within a few weeks following the contest.

UNION CARBIDE product — Ucon BRAND refrigerants — exclusive sales agent ANSUL

UCON Brand Refrigerants are manufactured by
UNION CARBIDE CHEMICALS COMPANY—Division of Union Carbide Corporation
30 East 42nd St., New York 17, N. Y.
Exclusive Sales Agent to Air Conditioning and Refrigeration Wholesalers
ANSUL CHEMICAL COMPANY, Marinette, Wisconsin

UCON and UNION CARBIDE are registered trade marks of Union Carbide Corporation

They'll Do It Every Time by Jimmy Hatlo

I STAYED AROUND TILL SIX O'CLOCK WHEN YOU WERE CALLED AWAY YESTERDAY, CHIEF---EVERYTHING'S UNDER CONTROL---
THANK YOU, ANGLEWORM--- I HAD TO GO TO THE HOSPITAL WITH AN OLD COLLEGE FRIEND--GOOD TO KNOW YOU WERE HERE MINDING THE STORE--- HEH-HEH---
BUT YESTERDAY, IT SEEMS, WASN'T ONE OF THOSE "NOTHING EVER HAPPENS" DAYS --- THEN THE FUN BEGAN !!
J.B., SIR--I WANTED TO LEAVE THESE ON YOUR DESK YESTERDAY, BUT THERE WAS NOBODY HERE---
EIGHT CALLS WHILE YOU AND MR. ANGLEWORM WERE OUT YESTERDAY, MR. BIGDOME --- MR. GAVEL FROM THE HOME OFFICE CALLED AT 2:10, 3:15 AND 4:08 --- ALSO---
10-7
JIMMY HATLO

Are Heating Contractors Afraid of Women?

WOMEN like to talk, and they've talked plenty about heating and air conditioning dealers and contractors recently. Their remarks haven't been flattering, either.

Conferences and symposiums on household problems, attended by representative women from all parts of the nation (and at which heating and air conditioning dilemmas were aired) have been "all shook up" lately.

These women conferees insist that heating dealers "do a lousy job" as far as they are concerned. They accuse the heating business of *ignoring them,* and "nothing gets a woman's back up higher in the air than ignoring her," as sage Bill Nessel puts it vernacularly.

They are resentful that they have not been told what they want to know, *and need to understand,* about heating and cooling their homes, they repeatedly complained. Mr. Contractor: Women must go to your shop and almost beg you to inform them about what you fondly imagine you are selling—according to these symposiums.

When you talk to them, if you deign to talk at all, women accuse you of gargling a technical jargon they cannot comprehend —instead of explaining your product benefits in "Kitchen English" which they could understand.

Sad examples of non-communication revealed in some of these women-talk symposiums:

One gal resided in a 300-home development—every one of which was equipped with a heating system to which cooling could be added. For five years not one salesman has come near her to suggest that she do so. Yet, she said wistfully, she really would like to have a cool house in the summer.

During the 12 years that Mrs. Blank lived in a neighborhood which is noted for its prosperity no dealer had even suggested that she improve her old heating system (or add a cooling unit to it). She *resented* this neglect, because she wanted help to convince her husband of the need.

Bristled another panelist: "Only salesman I've seen all year were an awning peddler and the Fuller Brush Man. Not one of the dozen heating and air conditioning dealers in my trading area give a tinker's hoot if I bake in the summer or freeze in the winter."

(No doubt, at the same time, most of those dealers were complaining about poor business.)

Women like salesmen intrinsically. Personable salesmen relieve the shut-in, "stir-crazy" boredom of housewifery. They inspire hopes and dreams. But where are the home-visiting salesmen for heating and cooling?

Mrs. Lady of the House controls the purse strings. If she finally decides that her home and her family need a new heating or cooling system, she probably will get it, come hell or high water.

But why not help her decide that's what she wants, instead of a fur coat or a big week-end in New York City? A fur coat will keep her warm, but who wants to wear it around the house all day?

Suggestions: Tell the better heating and air conditioning story to as many women as possible through talks at clubs and organizations (they're always looking for speakers); telephone housewives during the middle of a hot and sultry afternoon; push doorbells; and spend evenings with both Mom and Dad—talking about the health benefits of advanced climate control in their homes.

Keep your discussion simple, too. Forget every trade or technical term you ever learned. Instead, sell relief from dozens of household chores, sell cleaner homes, and don't forget that pure tempered air means healthier kids.

With air conditioning, the Missus no longer need worry about dust and dirt which blows in through windows—because windows stay closed in an air conditioned house.

Nor will her husband (you can tell *him*) have to take off screens and storm sash every spring and put them on again around Thanksgiving—because the storm sash will stay on all year around.

Repeat and repeat that a family will eat better and sleep better and be healthier in a properly air conditioned home. Moreover, Mr. Husband is more likely to come home every summer evening, rather than stop off at, or go out to, an air conditioned bar.

High indoor humidity causes mold and mildew on clothes and house furnishings. Such damage doesn't occur in an air conditioned home. Moths, flies, insects are kept out, too. Likewise colds and allergies.

Modest operating costs will be offset to a large degree by slashed cleaning and doctor bills, reduced away-from-home-entertainment, plus no need for expensive heat-escaping weekends and vacations.

Lets lure women onto our air conditioning bandwagon. Mr. Dealer Contractor, please don't be afraid of Women! They need you! And, they have testified, they want you!

Don't be so shy, good friends. You, too, can make a hit with the gals even if you are getting bald and paunchy.

It does every one of us good occasionally to have a steady look at our real selves, and ask if we are nice to know, and what we are doing about improvements. For personality takes you far in this world. My father could get anything out of anybody because he had such infinite charm, tact, and understanding. Once he said to me: "I wasn't born this way, you know. I thought it worth cultivating." I asked him what he found to be the greatest help in avoiding loneliness. He said: "When you start talking about yourself, SHUT UP."—URSULA BLOOM.

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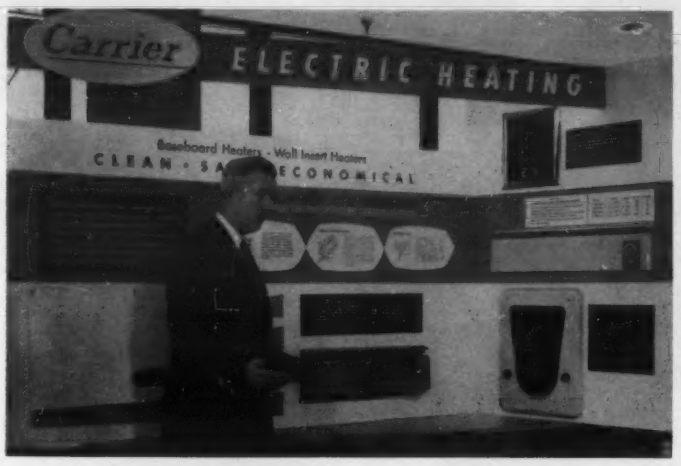
Correction

ALPHABET SOUP—Thom Muir, executive secretary of ARW, wrongly was identified with RACCA on this page last week. ARW formerly was REWA, not to be confused with REMA which was joined with ACRMA to become ARI, ASRE and ASHVE now are ASHRAE, and who's on first? Suffice it to say that all these letters, however confusing, spell INDUSTRY PROGRESS.



CARRIER ELECTRIC HEAT LINE—George Robinson, residential sales manager for Carrier Corp., shows company's new line of electric resistance heating products. Included are low rise baseboard radiation panels and wall insert heaters. A special smaller size bathroom unit also is included with a forced air fan and thermostat. An announcement of the electric heating line appeared in the Nov. 9 issue.

API Announces Progress In Setting Up Industry Oil Burner Research Program

CHICAGO—Substantial progress in establishing a petroleum industry program of oil burner research was reported recently by an American Petroleum Institute consultant.

The report was made by David W. Locklin of the Battelle Memorial Institute, Columbus, Ohio, at a meeting of the Fuel Oil Committee of the API in the Congress hotel. Locklin is research consultant to the committee.

A study of research possibilities already has stimulated industry-wide interest in improving oil burners, Locklin said. He noted the desirability of coordinating independent research which is now being conducted by refiners and equipment manufacturers.

Research now is under way, Locklin said, in the atomization of fuels, fuel-air mixing, catalytic and surface combustion, combustion acoustics, new fuel oil uses, new types of burners, modifications of existing burners, and improvement in field installations to assist marketing and servicing organizations to retain their present customers.

Refiners, Locklin said, have expressed willingness to take on segments of an industry-wide research program in their own laboratories. Equipment manufacturers generally, he said, prefer that the petroleum industry develop data and principles which they, in turn, can use to develop new designs.

Within two or three months, Locklin said, a bibliography and review literature will be established to speed the communication of new ideas and data to all the industry.

The first of several technical discussion conferences has been held, he said, uncovering "significant research results, including new and unpublished data."

He estimated oil refiners now are spending about $500,000 a year on fuel oil research.

Locklin listed as concepts having promise of future research: controlled recirculation of combustion products, catalytic and surface combustion, vaporization in precombustion zones, unsteady-state combustion, unusual atomization techniques, and modified systems for combustion air.

Research men, he said, also are considering less familiar uses for fuel oil. Among these he listed uses for household appliances and direct generation of electricity.

Chicago Plumbing Contractors To Continue Ad Drive

CHICAGO—The first of a 12-month outdoor billboard advertising series consisting of ten 15 by 25-ft. billboards initiated the renewal of the Plumbing Contractors Association of Chicago's public relations program for the Chicagoland area.

The association's first billboard program began in 1958, consisting of cartoon characterizations designed to attract the attention of the public.

The 1959-60 billboard series has taken on a different air, for it will convey a specific message each month with appropriate art work consisting of as many as seven colors, according to John Higgins, president of the association.

"We are going to tell the public over and over again that by dealing with our contractor-members, they are getting the best bargain in the world . . . top grade installations with assurance of safety and quality, and yet without fear of excessive pricing," he stated.

The increased amount of calls that the association office receives has proven that repetition is a must and that billboard advertising was the best solution to reaching as many people as possible in a city the size of Chicago, the announcement said, adding:

"It has helped tremendously to increase the prestige of the association's members and the demand of their services by the public.

"Of direct advantage to the members of the association is the opportunity for any one of them to have his name, address, or/and telephone numbers imprinted on a billboard poster. The charge is very nominal, $40 for a one month period."

Tied in with the billboard advertising program is the special PCAC Blue Directory, listing the active members of the Plumbing Contractors Association of Chicago.

They are segregated into six areas of the city, each having classification letters identifying their work specialization. It was designed by the association as a convenience for the public and is distributed free of charge.

THIS UNIT PRODUCES...
• EXTRA YEAR 'ROUND PROFITS
• CUSTOMER SATISFACTION
• POSITIVE HUMIDIFICATION YOU CAN SEE . . . FEEL AND DEMONSTRATE
WALTON'S PATENTED CENTRIFUGAL ATOMIZER

HERE'S WHAT'S SPECIAL ABOUT Walton HUMIDIFIERS . . .

WALTON'S METHOD

Unlike unprofitable, toy-like "evaporators" and "vaporizers," Walton humidifiers are scientifically-engineered, precision-assembled units designed for positive, truly effective humidification. Employing the patented "centrifugal atomizer," Walton humidifiers produce great quantities of visible vapor without problems of clogging jets, limed evaporator plates or smelly wet packs. They are easy to demonstrate, dependable to operate and will always gain complete customer satisfaction.

WALTON'S QUALITY

Walton humidifiers reflect the result of twenty-five years of pioneering and research in the field of humidification. Walton's sole product and interest is humidification, and the Walton name is your assurance of quality and performance. Constructed solely of non-corrosive metals, the units also offer electronic balancing of the single moving part for trouble-free, whisper-silent operation.

A SINGLE SOURCE FOR EVERY HUMIDIFICATION NEED . . .

RESIDENTIAL MODELS . . . FOR HOT AIR OR WET HEAT SYSTEMS

INDUSTRIAL MODELS . . . FOR SPACE OR DUCT TYPE INSTALLATIONS

Selected and publicized as the humidifier to be used in *House Beautiful's* 1960 PACE SETTER HOUSE

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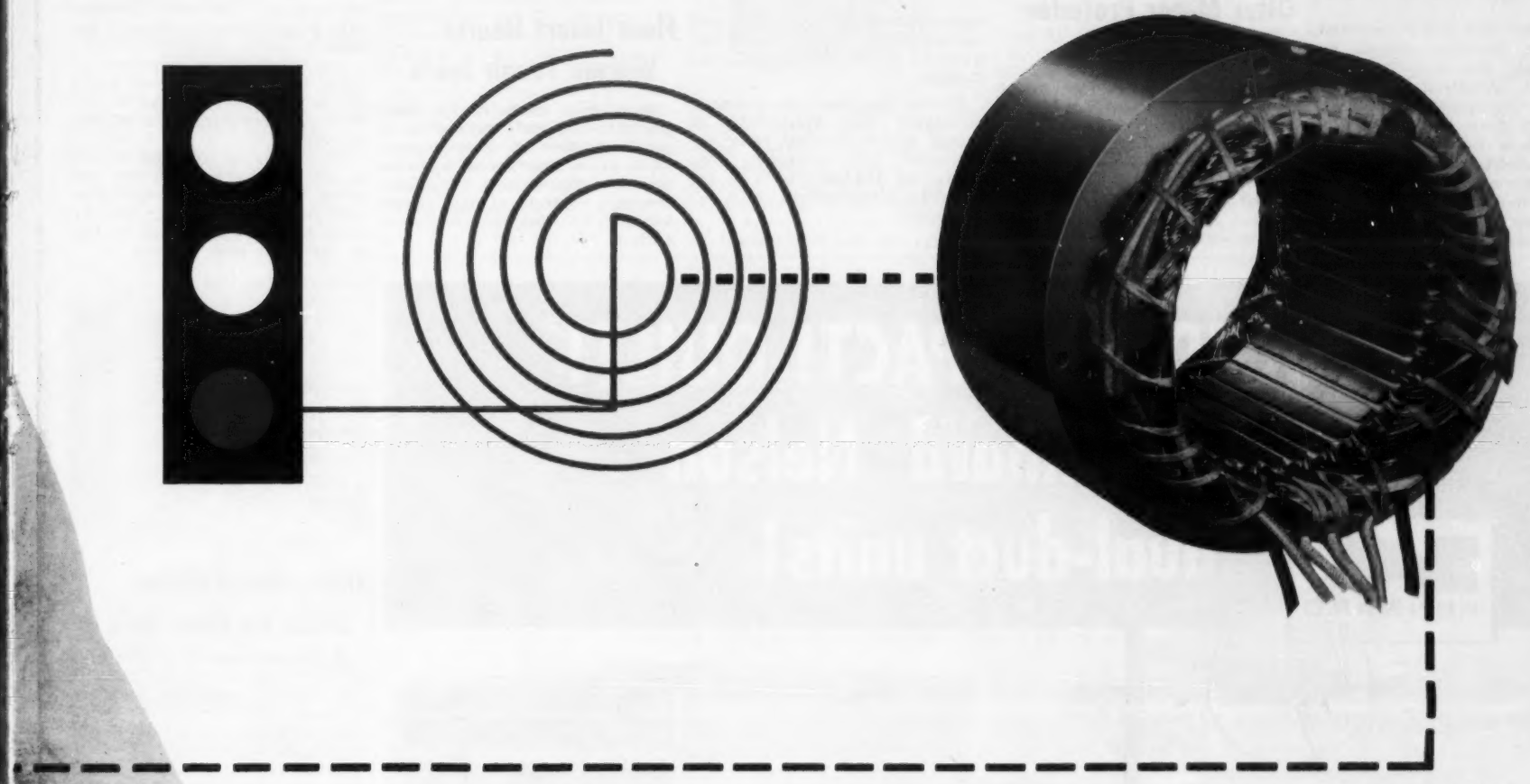


New Westinghouse GUARDISTOR motor stops motor failure caused by excess heat

At last, positive protection against motor overheating with this unique Westinghouse motor development. Smaller than an aspirin, the heart of the Guardistor* motor is a PTC† Thermistor embedded in the motor windings to sense temperature rise immediately.

With normal motor temperatures, the thermistor has low resistance which remains nearly constant up to a predetermined critical temperature. At this temperature, a 100 to 1 or more increase in resistance occurs for a small increase in temperature. The resistance stops current flow activating a control designed to "WARN" or "STOP" a motor failure.

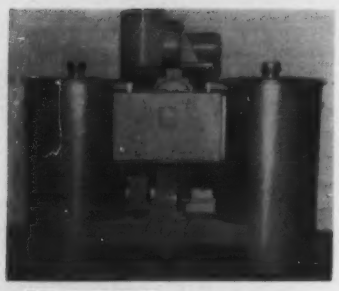
The Guardistor motor and associated control integrates all heat-causing factors of load, ambient, and power supply right in the motor windings to give you complete protection against motor burn-out.

*Trade-Mark
†Positive Temperature Coefficient
J-22155-A

YOU CAN BE SURE...IF IT'S

Westinghouse

WATCH "WESTINGHOUSE LUCILLE BALL DESI ARNAZ SHOWS" CBS TV FRIDAYS



Dehumidifier Removes 300 lbs. Water A Day

● Latest in a line of dehumidifiers for humidity control and processing, the completely self-contained, industrial model A75 has been announced by Universal Dynamics Corp., Dept. AH&RN, Box 9814 A, Arlington 9, Va.

This model is described as a completely automatic, "packaged" adsorption dehumidifier with new high capacity adsorption and reactivation systems and efficient high flow-low flow transfer valves. The A75 handles as much as 700 c.f.m. and can remove 300 lbs. of water in 24 hours, according to the company.

"Used originally for controlled humidity storage, the 'A' line of dehumidifiers is now also employed extensively for dry air in processing applications, humidity control in unheated spaces, low temperature installations, and also in combination with cooling equipment for lower cost humidity control without the expense and complications of using re-heat."

Offer Motor Protector Replacement Kit

● A compact "Klixon" motor protector replacement kit for domestic refrigeration service has been devised by Spencer Products Group of Metals & Controls Div., Texas Instruments, Inc., Dept. AH&RN, 34 Forest St., Attleboro, Mass.

Kits will be distributed by 162 authorized refrigeration parts and electric motor service parts distributors in the United States and Canada.

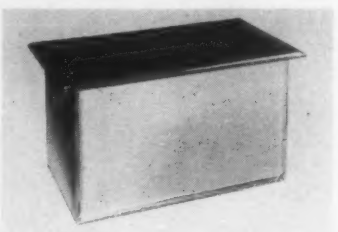
Earlier this year the company announced the availability of Klixon motor starting relay replacement kits, containing nine relays, for 115-volt, 1/12 to 1/2 hp. domestic refrigeration relay replacement.

Now, with the development of motor protector kits, servicemen can select replacement controls from a minimum of stock for most 115-volt compressor motor-starting and motor-protection repair jobs, the company said.

Each Klixon motor protector replacement kit contains eight "Star Series" protectors which, with the various leads provided for different connection requirements, can be used to replace 49 different protector ratings, it was stated. The protectors are for 115-volt, 1/8 to 1/2-hp. compressors of either the "pancake" or ISM type.

Floor Insert Heater Warms Tough Spots

● A floor insert heater engineered to heat such "difficult locations" as floor to ceiling glass walls or sliding doors is being offered by Electromode Div., Commercial Controls Corp., Dept. AH&RN, P.O. Box 1052, Rochester 3, N. Y.



The heater, model FI-4, is designed to fit between the floor joists located on 16-in. centers. One feature of the unit is the automatic plug out safety connection when the heater is removed for cleaning. The unit automatically plugs in when replaced in the floor.

Additional safety measures include the specially fitted safety switch which cuts off heat if anything prevents normal and efficient operation.

The heater is available in 120 or 240 voltage and 400 and 800 watts. While the 400-watt heater measures 6 1/16 in. wide by 14 1/8 in. long, the 800-watt model is 6 1/16 in. wide but 30 1/8 in. long.

RUGGED! COMPACT! QUIET!
New Kennard Nelson dual-duct units!

KENNARD

herman nelson

New compact Kennard/Nelson dual-duct air conditioning units—available in both Low and High Pressure models—insure lower engineering and installation costs with these special features:

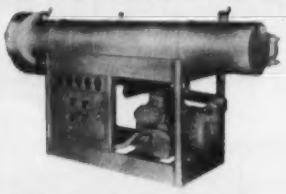
- Quiet fan operation
- Heavy-duty frame and panel construction
- Rigid fan-bearing-shaft assembly—minimum vibration
- Optional horizontal or vertical discharge
- Static pressures up to 8"

Write for all the facts on the complete Kennard/Nelson Dual-Duct line: Engineered Air Systems Division, American Air Filter Company, Inc., 109 Central Ave., Louisville, Ky.

AAF American Air Filter
BETTER AIR IS OUR BUSINESS

Kennard/Nelson are famous brands among AAF products

OTHER AIR CONDITIONING, HEATING, VENTILATING PRODUCTS

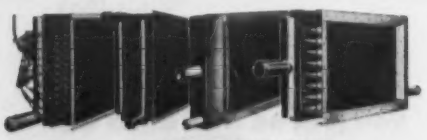


PACKAGED LIQUID CHILLERS

Kennard/Nelson's shell-and-coil chiller puts this Packaged Liquid Chiller in a class by itself in the 20 HP - 150 HP range. Exclusive internally-finned tubing, built as an integral part of each tube, overcomes costly heat transfer problems on the refrigerant side.

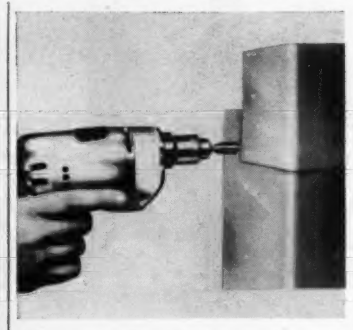
AIR HANDLING UNITS

The Kennard/Nelson line includes 14 sizes of horizontal and vertical air conditioning units with CFM ranging from 400-36,000. Heating and ventilating units with 400-36,000 CFM capacities for steam or hot water systems.



COOLING-HEATING COILS

Controlled K/N quality is featured in a complete line of cooling and heating coils including direct expansion, chilled water, steam (non-freeze and standard), and hot water. K/N offers a complete line of cooling towers, evaporative condensers, sprayed and finned coils for heating and cooling service.



Sheet Metal Screw Drills Its Own Hole

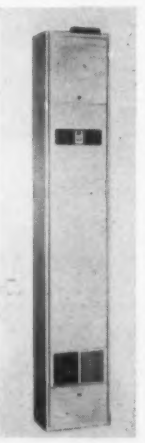
● Development of a new type of sheet metal screw that drills its own hole in metal has been announced by Duro-Dyne Corp., Dept. AH&RN, Route #110, Farmingdale, N. Y.

Called the "drill screw," it will penetrate and engage securely in sheet metal without the necessity of a pre-drilled or punched hole when driven by a standard 1/4-in. high-speed electric drill equipped with a special drill screw chuck, the company announcement points out.

The manufacturer contends that only a minimum amount of practice is required in learning to use the new drill screw, particularly in timing the release of the trigger of the drill as soon as the screw enters the metal. Available in #6 x 3/8, #7 x 1/2, #8 x 1/2, and #10 x 1/2.

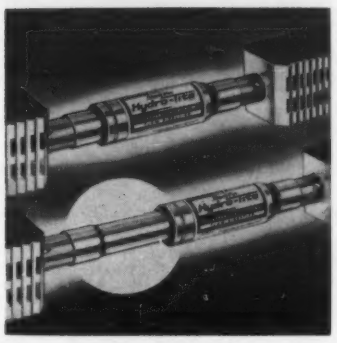
Vented Recessed Wall Heater Is 84 In. High

● A new short model "Panelray" 84 in. high has been added to its heating line by Day & Night Mfg. Co., Dept. AH&RN, 855 Anaheim Rd., La Puente, Calif.



The model is a fan type vented recessed heater operating on the counterflow system. The 50,000 B.t.u. capacity model unit, can be installed recessed between standard 2 by 4 wall studs or flush to the wall in as many as three directions, according to the company.

Such features as a "Jetglas" coated heating element, a 24-volt control system, a direct-drive blower, and optional equipment are being offered with the Panelray, according to the announcement.

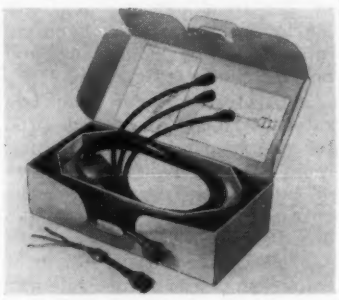


Expansion Joint Guaranteed Leakproof

● The Slant/Fin "Hydro-Tite," described as a guaranteed leakproof expansion joint, has been introduced by Slant/Fin Radiator Corp., Dept. AH&RN, 130-15 89th Rd., Richmond Hill, N. Y.

Hydro-Tite is said to have widespread use for low pressure steam or hot water applications. Installed in the fully extended position it will compensate for expansion up to 2 in. in the ¾-in. diameter size and up to 2¾ in. in the 2-in. diameter size, the company said.

"Two series are manufactured: one with sweat connections at the ends allowing for rapid installation in copper systems such as baseboard heating where its narrow size permits installation under the cover. The other is a threaded series FPT x FPT (IPS) which simplifies its use in low pressure steam systems and other threaded applications."



Patented Connectors On Power Cord System

● A method of eliminating makeshift harnesses used to bring temporary power to tools and lighting in home construction and other similar situations, is being introduced by the Tuffline Div. of Whitney Blake Co., Dept. AH&RN, New Haven 14, Conn.

This new method consists of a 3-pole system of Whitney Blake "Dynaprene SO" cords permanently molded to heavy-duty neoprene connectors, it was explained.

The manufacturer claims that the system, including the patented connectors, is completely waterproof.

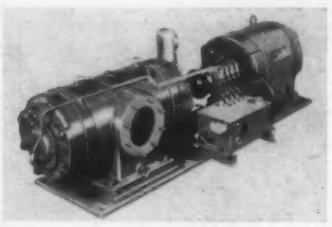
Name Plates Made of Anodized Aluminum

● Anodized aluminum name plates for use as trademark or insignia and for marking and decorating air conditioning, heating, refrigeration, and other equipment are manufactured by Allied Decals, Inc., Dept. AH&RN, 8471 Hough Ave., Cleveland 3.

Name plates are custom-made in all sizes, designs, and in one or more colors, the company said.

Want More Details?

ADDITIONAL details on products that are described on these pages may be obtained by writing the manufacturer at the address given in each What's New story.



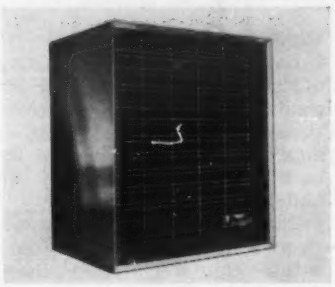
Vilter Adds Rotary Booster Compressors

● Addition of a series of rotary booster compressors to its line of refrigeration and air conditioning equipment has been announced by Vilter Mfg. Co., Dept. AH&RN, Milwaukee 7.

Available for use with ammonia, Refrigerant-12, and Refrigerant-22, the Vilter rotary booster is designed for low temperature applications and will fit readily into multi-stage systems as the first or booster stage, the company said.

The VRB ranges in capacity from 4 tons through 400 tons of refrigeration, depending upon compressor size and operating conditions. Of the sliding vane type, the VRB is internally lubricated by means of a mechanically driven forced-feed lubricator.

Janitrol Unit Heater



JANITROL'S NEW 67 series unit heater is restyled to blend with any decor. It features gold-tone grille and straight side panels without openings. Quiet in operation, it is available in 11 gas-fired and five oil-fired beige models from Janitrol Heating & Air Conditioning Div., Dept. AH&RN, 400 Dublin Ave., Columbus 16, Ohio.

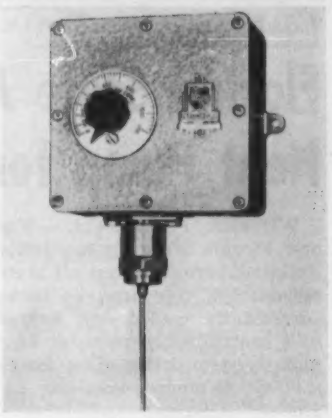
Temperature Control For Transport Use

● A single-point, weather-resistant non-indicating temperature control, designed primarily for exterior use to control either refrigeration or heating equipment, was put on the market recently by the Partlow Corp., Dept. AH&RN, 530 Campion Rd., New Hartford (Utica), N. Y.

Called the model GWS, the control is said to be particularly well suited for cargo containers, highway transport, or railroads.

Its design permits the instrument to operate with equal efficiency for either heating or refrigeration by simply reversing the position of the switches with the case, the company said.

Model GWS is an exceptional control in this respect, it was pointed out, that supplied with a manual reset limit switch, it acts as a limit control to shut off a heating or cooling medium at any predetermined temperature. In this case, it is used in conjunction with a temperature control to provide a safeguard against results of control or accessory failure (solenoids, motor valves, etc.).



Used as a limit control, it is set a few degrees higher (or cooler) than the separate controlling instrument. If the control fails to shut off for any reason, the limit control will operate to stop the flow of the heating or cooling medium.

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Then you should know...

IN ELECTRIC HEAT THERMOSTATS... WHITE-RODGERS IS THE LEADER!

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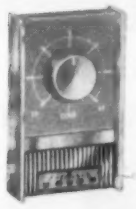
World's Largest Seller

TYPE 1A65
Elegant New Companion

The Industry's Standard of Beauty And Performance



Easily attached thermometer now available at slight additional cost.

More than 50 electric heat equipment manufacturers put their brand names on White-Rodgers 'stats . . . using several times more than all other makes combined.

If your organization is considering electric heat, as a possible new product, we at White-Rodgers offer you the experience gained through leadership to assist you with any control problem you may encounter. Our technical staff is at your service . . . just write us.

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Cost: $690 per Ton

Florida State Agency Office Bldg. Installs Heat Pump for Flexibility, Economy

WINTER PARK, Fla. — The new Florida State Agency Office Building here, housing all state agencies in this area, is being successfully cooled and heated by a central water-to-water heat pump system designed by James L. Gay, Orlando consulting engineer.

The heat pump was selected for a number of reasons, according to Gay. But particularly it was chosen because it offered needed flexibility to meet changing office requirements of the agencies and lowest possible installation and maintenance costs.

Complete air conditioning, heating, and ventilating system cost $690 per ton for the calculated tonnage.

The two-story structure contains approximately 65,000 sq. ft. of space in the form of a cross. Wings extend from a central rotunda at right angles to the northeast, northwest, southeast, and southwest.

Second floor, with exterior glass from 3 ft. above the floor to ceiling, overhangs the first floor providing a shaded walk around the outside of the building and protecting the first floor from direct sun rays. Grey heat absorbing glass is used on the second floor and venetian blinds on both floors.

Laid out as it is, the building did not lend itself to simple air conditioning design. At some time during the day, almost maximum sun load occurs on each side of each wing of the building.

Therefore there is no diversity of load between wings, only within the wings themselves, Gay said. Also, because each wing has large interior areas, at least three zones per floor per wing were required for proper temperature control.

In calculating the heat load, a novel system was used. Total internal heat load was broken down on a square foot basis. In the exterior rooms, solar load based on linear feet of window wall was added as required.

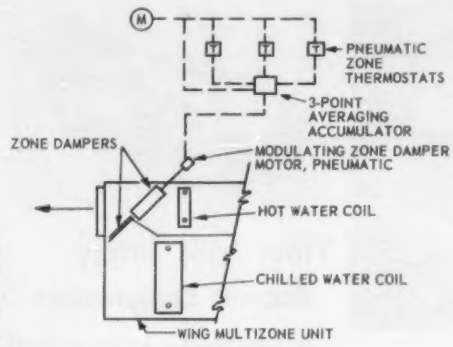

FIG. 1—Detail shows controls on multizone air handling unit. Each unit serves on wing of the building.

Figuring for summer design temperatures of 95° F. d.b. and 78° F. w.b. outside and 78° F. d.b., 65° F. w.b., and 50% r.h. inside, cooling load was calculated at 193 tons. At winter design temperatures of 35° F. outside and 75° F. inside, heating load totaled 1,790,000 B.t.u.h.

After complete analysis of various systems, the water-to-water heat pump was selected for the job for these reasons:

1. There is more cooling load than heating load, which makes it easier to get the required amount of heating from the heat pump.
2. Good well water was judged to be available at a satisfactorily low temperature (76° F.).
3. Heat pump would be much cleaner to operate and architect was pleased not to have a chimney to mar his design.
4. Heat pump was deemed safer to operate than a boiler for heating.
5. Heat pump system could easily be made fully automatic.

To do the job, Gay selected a Carrier centrifugal compressor of 200 tons' capacity and five Marlo multizone air handling units—one for each wing and one for the hearing room.

Multizone units for wings are rated at 20,000 c.f.m. and 2,750 for the hearing room. Hearing room is located on second floor of building in center over the entrance. It was designed for an occupancy load of 65 persons.

Well water is used for heat source on the heating cycle and for condenser water on the cooling cycle.

Refrigeration system provides chilled and hot water simultaneously to coils in the air handling units. Both water temperatures are modulated as required by outdoor temperatures.

This is done through a Powers Regulator Co. master thermostat that resets control points of submaster indicating regulators on hot and chilled water lines. Control system will be described in detail later.

Each multi-zone unit for the wings (see Fig. 1) has hot and cold decks feeding air at required temperatures to the three zones, two exterior and one interior on each floor. Ceiling spaces are used as return air plenums. Zone dampers are controlled by three averaging thermostats in each zone.

Air handling unit for the hearing room is equipped with face and by-pass dampers and automatic water circuit changeover valves. (See Fig. 2.)

Air distribution in general is accomplished by use of flat plate ceiling diffusers made specially by Barber-Colman Co. Diffusers drop into one 2 by 2-ft. tile space in the acoustic ceiling grid. They may be adjusted to desired c.f.m. and direction of throw without removal from the ceiling.

This distribution flexibility is necessary because agencies vary in their space requirements. Some may occupy only a few

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The specially treated wood decking in H&M towers resists rotting, fungus attack and algae which accumulates and obstructs air flow in most other towers. Performance remains "like new" in H&M cooling towers year after year.

Only Halstead & Mitchell offers a 20-Year Guarantee on the wetted deck against failure due to rotting or fungus attack.

Other H&M features for unusually low maintenance include permanently sealed fan bearings, and a heavy gauge steel cabinet protected against corrosion by three plastic coats applied *after assembly*. Be sure. Ask your local wholesaler for H & M towers, or write to Halstead & Mitchell, Bessemer Building, Pittsburgh 22, Pa.

H & M COOLING TOWER WITH PRESSURE TREATED DECKING

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Water-Cooled Condensers · Cooling Towers · Air-Cooled Condensers · Finned Coil Products

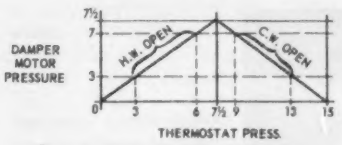

FIG. 2—Chart shows how single thermostat automatically controls heating and cooling operation and automatic change-over in hearing room.

rooms. Others take an entire floor or more.

As some agencies require more or less space from time to time, provision had to be made for partition changes. That involved providing some means of moving air conditioning outlets and return air registers.

Certain assembly rooms have auxiliary volume dampers to help adjust conditioning to the varying load.

Controls Fully Automatic

The entire system is on time clock operation and all controls are fully automatic. No manual switching or change-over from heating to cooling is required.

Any air handling unit, however, may be separately started at will and the refrigeration equipment will operate automatically.

Excess air from wings due to outside air intake is exhausted through toilets and the rotunda to ventilate and partially condition these spaces.

About 15% make-up air is introduced, about 3,000 c.f.m. for each wing and 1,125 c.f.m. for the hearing room. Fresh and return air is filtered through Air Maze high velocity cleanable filters.

Multizone Units Save Space, Allow Simultaneous Heating, Cooling of Zones

Gay pointed out that multizone units were selected instead of a number of smaller single air handling units. They save space, provide hot and cold decks for simultaneous heating and cooling of the zones in a given wing, and one unit per wing will allow the load in the wing to be diversified as peak solar load occurs on only one side of the building at a time.

He noted that when heating and cooling loads are equal, the system is capable of maintaining an internal heat balance by pumping heat from the internal

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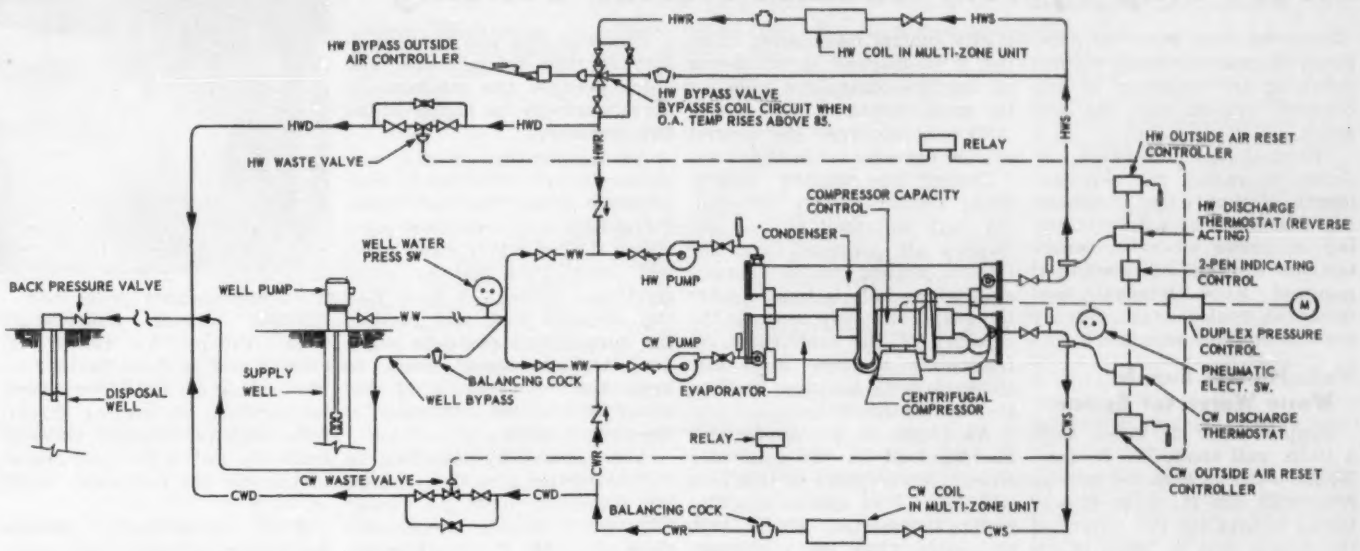
Fig. 3—Schematic Control and Water Flow Diagram for Florida State Agency



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The motor used in this equipment is protected against overloads, low voltage, over-voltage with a Mighty Mite Thermal Protector

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SPORLAN *Catch-Alls*
...the Perfect Filter-Drier

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The famous Sporlan molded porous Catch-All core is a blend of highly efficient desiccants that now offers EVEN GREATER drying capacity. It is activated after assembly to the highest degree of dryness, then immediately sealed against any loss of activation before installation with moisture and tamper-proof seals.

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It cannot powder or pack . . . the refrigerant cannot by-pass or channel around it. As a matter of fact, the famous Sporlan molded porous core Catch-All offers the only true filtering device capable of filtering out foreign matter with negligible pressure drop.

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Buy Sporlan *See-Alls*, too . . .
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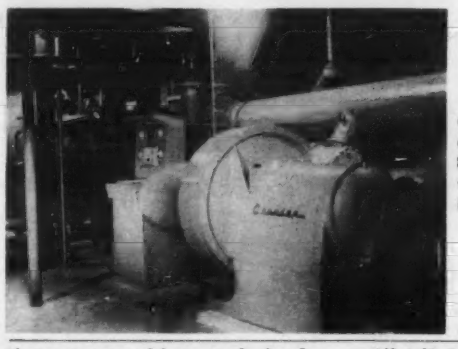
Our 25th Anniversary...1934-1959

Heat Pump System Handles Florida Building--



CARRIER 200-ton centrifugal compressor supplies five air handling units serving four wings and hearing room in cross-shaped two-story building.

(Concluded from preceding page)

zones to external zones without requiring any exchange of heat between system and the well water.

"Even though this exact condition is rarely met for any length of time," Gay commented, "there will be a definite saving in power whenever simultaneous heating and cooling is required since internal heat from the cooled areas may be used instead of rejected."

Wells Handle Supply Waste Water for System

Supply water is taken from a 10-in. well about 710 ft. deep. Waste water is disposed into an 8-in. well 390 ft. deep. It was tested to take the full output of the supply well at 200% of capacity without blowback.

The 450 g.p.m. Johnson well pump is sized to supply only the static head pressure plus the supply and discharge well piping losses, plus a small reserve. Since this pump runs continuously and the discharge from the circulating loops to the discharge well is throttled to maintain system balance, a pump was selected with a very flat operating head characteristic in order to minimize pressure variations in the system.

Well Water Always Flows Through Pump

A small by-pass line was provided so that a small amount of well water will always be flowing through the pump to lubricate and cool it. Hot and cold water circulating pumps are sized to merely overcome the friction in the piping loops which include the coils in the coils in the air handling units. They are both Deming pumps of 400 and 490 g.p.m. capacity, respectively.

The well pump discharges into either of the two circulating loops and each loop is provided with a waste valve allowing water to be wasted from it.

Hot water thermostat is reverse acting and chilled water thermostat is direct acting. As mentioned earlier, the control point for each rises as outside temperature falls.

Control points rise 2° F. for every 5° F. drop in outdoor temperature, starting at 90° F. for hot water and 46° F. for chilled water at 70° F. outside temperature. Thus, when outdoor temperature drops to 65° F., hot water control point rises to 92° F. and chilled water control point to 48° F.

What Outdoor Reset Feature Accomplishes

This outdoor reset feature, Gay noted, insures that during the cooling season, hot water temperature is maintained as low as possible to give a minimum condensing temperature.

During the heating season, chilled water temperature is raised because at lower outdoor temperatures a minimum of cooling will be required, even in the internal zones.

Both thermostats are connected to a dual type pressure relay which permits the higher of the two air temperatures to control the centrifugal refrigeration machine through its capacity control mechanism, causing it to respond to whichever of the two controllers calls for the most output.

This is the way the control system operates. (See Fig. 3.)

During the cooling season, water temperature in the cooling loop will tend to rise. Increased air pressure from the Powers chilled water thermostat, whose bulb is located after the evaporator, will increase the capacity of the centrifugal refrigeration machine until machine capacity balances load on the cooling circuit.

As there is no appreciable heating load on the condenser circuit, temperature in this loop will rise. This causes the hot water thermostat, whose bulb is located after the condenser, to reduce its air pressure.

However, this will have no effect on the refrigeration machine because the machine responds only to the higher of the two pressures.

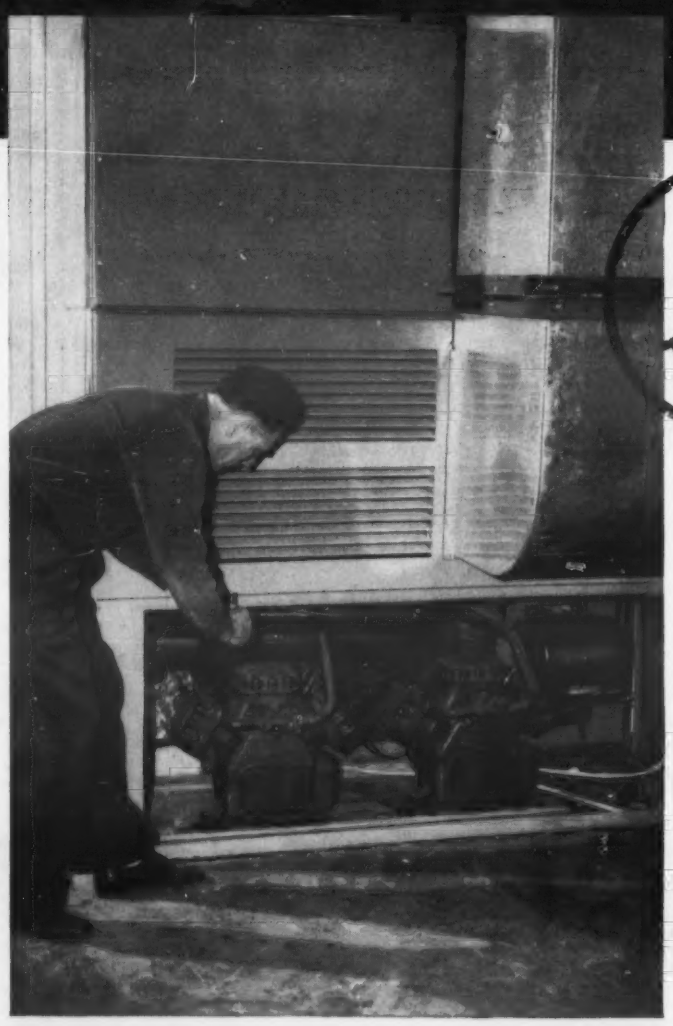
As temperature in the condenser circuit continues to rise, pressure from the hot water thermostat will drop to a point where the hot water waste valve will open. This permits warm condenser water to flow into the disposal well and permits the supply well pump to introduce enough cooler water to keep the temperature of the water leaving the condenser at the proper value.

A three-way by-pass loop on the hot water circuit by-passes air handling unit hot water coils when outside temperature rises about 85° F., thus preventing use of reheat under conditions approaching peak load.

When outside temperature falls, demand for reheat increases and so does the load on the heating coils. As this occurs, temperature in heating circuit falls slightly, causing pressure from the hot water thermostat to throttle the hot water waste valve.

This automatically reduces the amount of well water circulated through the condenser until all heat produced in this circuit is dissipated by the heating coils. The system now operates without the addition of well water into either loop.

As outside temperature falls further, heating load increases and cooling load drops. Temperature in the cooling circuit also drops, causing the cooling water thermostat to reduce its air pressure. This will not affect refrigeration capacity as machine



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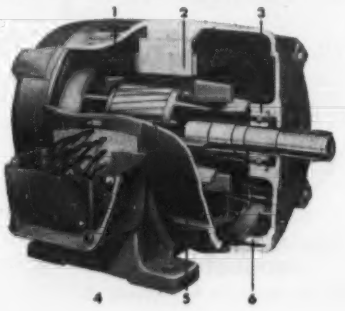
1. Fortified insulation lasts longer; resists moisture, oils and chemicals 2. Unitized stator gives better electrical performance 3. Pre-lubricated bearings eliminate on-the-job greasing 4. Precision manufacturing produces smooth, quiet operation 5. Armorized frame shrugs off physical abuse, stands up to attacks of foreign elements 6. Drip-proof ventilation gives complete protection *regardless* of mounting position.



is now controlled by the higher pressure hot water thermostat.

As temperature drops further, chilled water thermostat opens the chilled water waste valve, wasting water from the cooling circuit and allowing the supply well pump to add enough warmer well water to the evaporator circuit to maintain the proper temperature leaving the evaporator.

Thus, Gay commented, there is no definite changeover from heating to intermediate to cooling. Instead, the system reaches equilibrium under any condition of cooling load, heating load, or both.

Another unusual feature of the control system is a very simple automatic temperature and change-over control for the hearing room unit. This control allows heating and cooling operation and change-over to be accomplished automatically by a single thermostat with a single coil in the unit.

This heat pump system was put into operation late last winter, in time to demonstrate its more than ample heating capacity. It has since carried peak design cooling loads easily.

"After the usual difficulties of balancing the system to the satisfaction of all the occupants —or most of them, a very satisfactory operation has resulted," Gay declared, "even in areas with greatly varying loads, such as the hearing room."

Quietness of operation has particularly pleased state employes since only a partition separates the centrally located machinery room (Fig. 4) from one of the wings. Vibration is so low that a coin may be balanced on edge on the machine under full load operation.

The system was installed by Henley & Beckwith of Jacksonville, the mechanical contractor on the job.

Men on the Move . . .

Avery Engineering Co. (Cleveland)—HUGO C. SMITH has been appointed sales manager of the Refrigeration Div. He has had more than a quarter century of experience with Carrier and Frigidaire in application engineering of large installations.

Minneapolis-Honeywell Regulator Co.—DOUGLAS K. RIDLEY has been named to a new post as contract sales manager for automatic control equipment produced by the Brown Instruments Div. and other Industrial Products Group units. Ridley joined the Commercial Div. in 1947. He served as regional sales manager in Dallas and Chicago prior to his present assignment.

The Torrington Mfg. Co.—ADAM M. WILCZENSKI has been appointed manager, technical services, of the Specialty Blower Div. He joined Torrington in early 1955.

The Trane Co.—SAM H. HARPER, JR. has joined the San Antonio sales office as a sales engineer. ALVIN L. BALZER has been assigned to the sales office at San Francisco. Both completed the firm's specialized course in air conditioning and heating for graduate engineers, as did JOSEPH G. SKACH who has joined the St. Paul sales office. Skach recently spent six months in the Army, being assigned to the Engineer Research & Development Laboratories in Fort Belvoir, Va.

Drayer-Hanson Div., National-U. S. Radiator Corp.—CHARLES A. HASENSTAB has been named purchasing agent to replace ERNEST PETRO who resigned to enter his own business. Hasenstab has been purchasing agent for such firms as Califone Corp. and Holmes & Narver, Inc., Los Angeles.

Triangle Mfg. Co. (Oshkosh, Wis.)—DAVID G. GREEN has been appointed chief engineer of this producer of self-aligning pillow block bearings and special bearing mountings. Green was formerly with the Transmission & Axle Div. of Rockwell Standard Corp., Oshkosh.

Johns-Manville Corp.—CLINTON BURNETT, recently-elected president of Johns-Manville, was named president of Johns-Manville Fiber Glass, Inc., a subsidiary. FRANCIS H. MAY, JR., vice president of the subsidiary, was named chief executive officer. RANDOLPH H. BARNARD has resigned as president of the subsidiary but will continue as a consultant to the parent company.

Dunham-Bush, Inc.—WILLIAM EWING CLARK has been appointed an application engineer in the Cincinnati district office. BEN L. RADDATZ of the Los Angeles office has been transferred from application engineer to sales engineer.

The Ebco Mfg. Co.—CHESTER A. GARLAND, Natick, Mass., and HECTOR CORTES, New York City, have been named district sales managers for "Oasis" and Kelvinator water coolers, "Hot 'N Colds," and dehumidifiers.

Garland's territory includes Maine, Vermont, Connecticut, Massachusetts, Rhode Island, and upper state New York. He was formerly associated with Baker Refrigeration Co. Cortes will cover New York City, Philadelphia, and New Jersey. He was formerly manager of a Frigidaire distributorship.

York Div., Borg-Warner Corp.—A. E. LODS has been named controller of the York Houston wholesale branch. He has been secretary-treasurer and comptroller of an oil well supply firm.

Reznor Mfg. Co.—WILLIAM C. SCHODLATZ has been appointed vice president-personnel and administration. He has been vice president-administration since 1951.

Heil-Quaker Corp.—HOWARD KRUEGER of Dearborn, Mich. has been appointed district sales manager for Michigan. He was formerly with a hardware wholesale house and at one time was a licensed heating contractor in Detroit.

Research Products Corp.—GLENN A. OLSEN has been added to the sales staff. He is now serving the territory of Arkansas, Oklahoma, north Texas, and Memphis, with headquarters in Oklahoma City. Olsen has been associated with the company for the past year in the home office in Madison, Wis.

Air Conditioning Supply Co. (Los Angeles)—FRANK ANTELLINE has joined the firm as assistant manager of the recently-formed branch office facility in metropolitan San Diego. A.C.S. is exclusive representative for Drayer-Hanson air conditioning products in The Southland.

Dravo Corp.—Election of Carl B. JANSEN as chairman of the board and chief executive officer and WILLIAM E. CLARK as president and chief operating officer was announced. Jansen, president since 1946, succeeds WILLIAM K. FITCH, who retired Dec. 1. Clark has been executive vice president since 1955.

C. R. BOYER has been named manager of the Light Metals Dept. of the Engineering Works Div. He was formerly assistant operations manager of the division.

Modine Mfg. Co.—JAMES W. HALL, Atlanta, has been named southeastern regional sales manager. He formerly held a similar post with Trion, Inc.

Amstan Supply, division of American-Standard—JAMES E. ADAMS has been named regional manager, with headquarters at the division branch in Dallas. Formerly manager of the Amstan branch in Denver, he will direct the operations of nine Amstan branches in Texas and Louisiana.

Westinghouse Life-Line A motors customer approved for air conditioning

Westinghouse Life-Line® "A" motors have been thoroughly tested in tough air conditioning jobs throughout the country . . . and proved *outstanding* for rugged performance, dependability and extremely quiet operation.

Precision manufacturing and dynamic balancing of this Westinghouse motor have produced the quietest operating unit available. Tests in soundproof laboratories prove this Life-Line "A" motor produces an operating sound level lower than other standard motors.

Armorized frame provides rigidity to prevent armature misalignment even with heavy shaft loads . . . protects motor from physical abuse and contamination. Ventilation openings in the end brackets make the Westinghouse motor *completely* drip-proof, regardless of mounting position. Life-Line "A" 4-way sealed, prelubricated bearings keep grease in . . . dirt and water out . . . eliminate on-the-job greasing in out-of-the-way applications.

For complete information, call your local Westinghouse distributor or write Westinghouse Electric Corporation, 3 Gateway Center, P. O. Box 868, Pittsburgh 30, Pennsylvania. J-22004

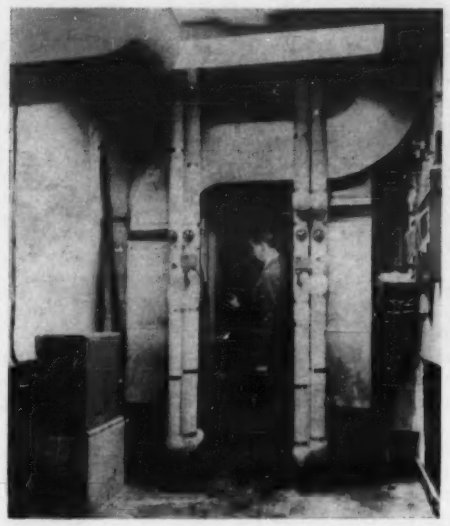
YOU CAN BE SURE...IF IT'S Westinghouse

Packaged Units Cut Hotel Air Conditioning Operating Costs by More Than One Third

BETTER air distribution was an additional advantage achieved with the substitution of package air conditioning units for chilled-water central system. Here, in the Walnut Room, ceiling diffusers provide even flow of air and old duct work along the wall, which feeds fans for chilled water coils, is now used as a return air duct.

NEW YORK CITY—If it is true that in planning air conditioning for a large building, the flexibility and adaptability of packaged units and their operating economies should be weighed against the economic advantages attributed to central systems, then both the buyer and installer of the package units installed in the public rooms of the Warwick hotel here believe they made the proper move.

Installation of five packaged units in its public rooms, which replaced cooling which had previously been supplied from a chilled water central system, served to provide more effective air conditioning under varying conditions, and reduced operating costs by something more than one third, states the Warwick hotel management.



SPACE-SAVING PACKAGE units were installed without using rentable space. Here, two 8-ton Typhoon air conditioners are installed at the rear of a coat room. One feeds the Warwick Room and the other, the public room lobby. Each unit is turned on only when the room it serves is occupied, and operates only when needed.

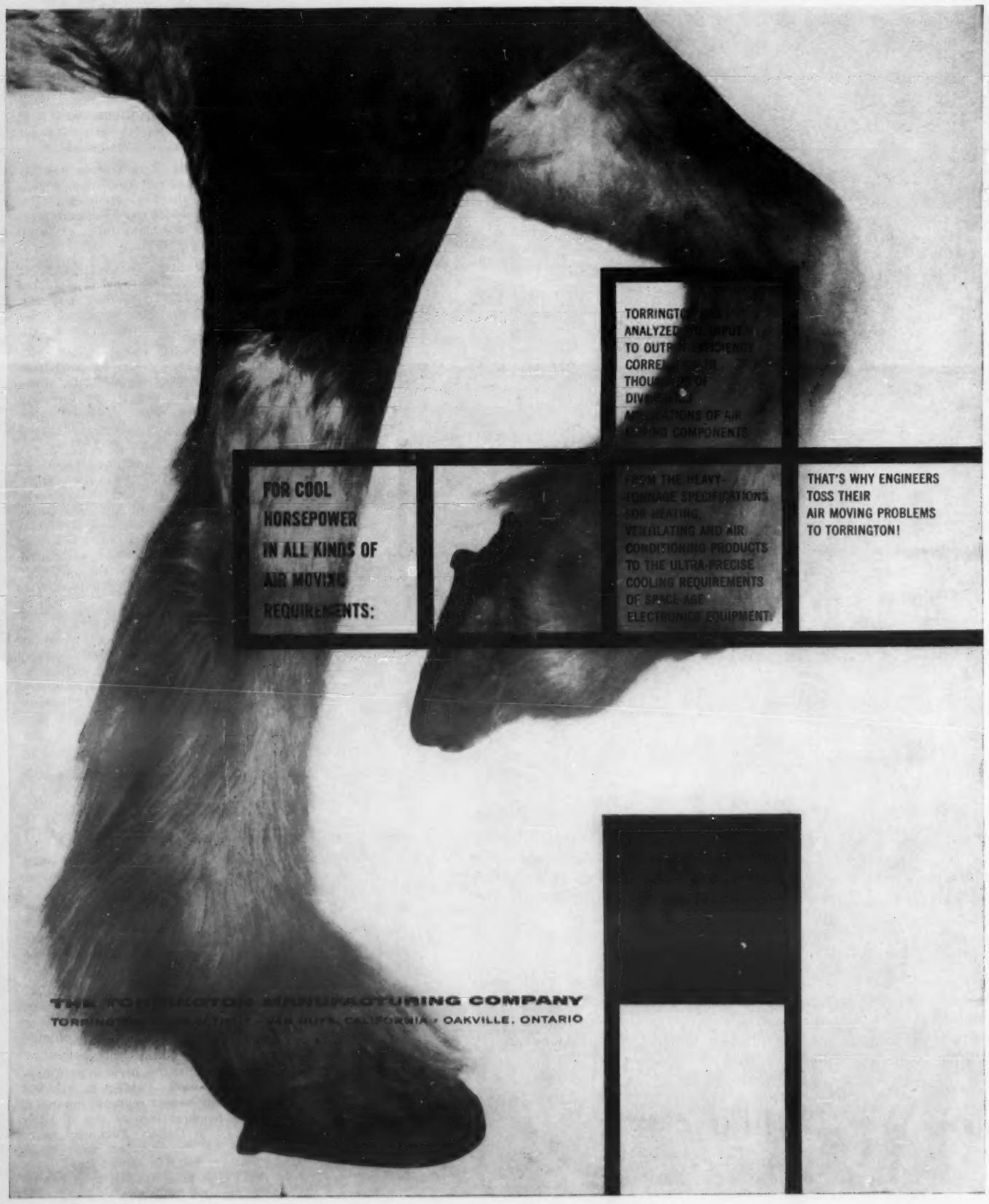
The central chilled water system was installed about eight years ago to cool 80 private rooms and four public rooms and a public room lobby, all on the second floor. The following disadvantages in the use of the central system for the public rooms, and how the packaged units overcame these problems, has ben described by the hotel management as follows:

The same coils were used for heating and cooling, and the only changeover made was the one made twice a year. Thus, there was no provision for variable conditions in public rooms, and on cool Spring and Fall days, private rooms required heat while in the public rooms large crowds often developed a heat load that required air conditioning.

In the operation of the former system there was no individual temperature control, and if the private rooms were getting heat, so were the public rooms. With the installation of the package units, each room is independently controlled by its own thermostat.

Only the air conditioner in the room in use is in operation at any specified time. Formerly, it had often been necessary to operate the entire central system, with an operating engineer on duty, when air conditioning was actually required for only one public room.

In the installation of the five Typhoon Air Conditioning Co. package air conditioners by the S. J. O'Brine Cos., New York City contractor, improvement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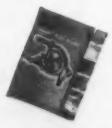

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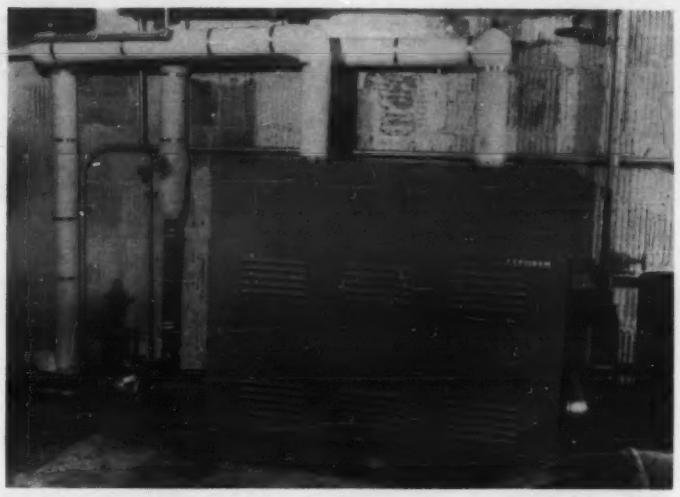
NEWS readers are invited to write to the editor giving their opinions on any subject of interest to the industry.



FLEXIBILITY of package systems permitted use of package water chiller instead of central system for one of the five rooms. The coils and blowers used with the older central system were used with the new unit. The only problem in the room which this unit serves was the lack of individual control. The new system, which solved this problem, is often used for cooling after the central system has been converted to heating for the winter and before it is reconverted in the spring.

has also been made in the air distribution system.

Ducts from the remotely installed packaged units provide even air distribution. One rectangular room that had been handled by three blower-coil units at one end of the room, with resulting unsatisfactory air distribution, is now cooled by a duct, with registers on both sides, running down the center of the room through its entire length.

Also, because air distribution had been poor in the old system, the new system was so constructed and installed as to provide for heating. Typhoon built the package units with steam coils in the air discharge plenum, and the installer connected steam lines from the existing boiler.

Installation of the packaged units was made in such a manner that they occupy no income-producing space. Two 8-ton Typhoon self-contained water-cooled units were placed in the rear of a coat room between the two areas they serve. A 20-ton Typhoon unit, which serves the largest public room, was placed in an unused closet. Another 20-ton unit was put in a closet behind the bar that serves that particular room.

A 15-ton Typhoon water chiller that uses the old system's coils and blowers, is installed in a machinery room. This chiller serves a room where the former system's air distribution setup was adequate, and individual room control has been added.

Two water-cooling towers which serve the total of 56 tons of water-cooled units are installed on the roof, at the point where the building is set back at the fourth floor.

The installing contractor also found that it was easier to solve ventilation problems because of the greater flexibility provided by the package units.

Ventilation loads vary as much as cooling loads in public rooms. Vent fans were installed in windows in rooms where ventilation had proved to be a problem. Since cooling for each room is now done by an individually controlled separate system, the additional ventilation doesn't reduce cooling effectiveness.

Cooling costs have been reduced from one third to one half with the new system, estimates Irwin Schilicht, general manager of the Warwick. He lists the following principal reasons for these savings:

1. Each package unit is used only when it is needed. With the old system, the entire second floor was cooled even when only one room was in use. Since a New York hotel can expect only about 60% usage of public rooms during summer months, savings with the packaged units are considerable.

2. By reducing the heavy demands on the chilled water system used for the private rooms, it permits the system to operate more efficiently and with greater reliability.

Marco Sales Moves Into Single Building

ST. LOUIS — Marco Sales, Inc., distributor of Carrier air conditioning equipment in the St. Louis area, has consolidated offices, warehouse, parts, service and showrooms into one centrally-located building, according to Kenneth A. Roffmann, president.

The three-story building of fireproof brick construction has 35,000 sq. ft. of storage and office space, excellent truck and rail facilities, and a three-ton freight elevator. It is located in almost the exact center of the St. Louis trading area on Forest Park Ave.

Marco Sales serves an area approximately 250 miles in diameter including parts of both Missouri and Illinois, according to the announcement.

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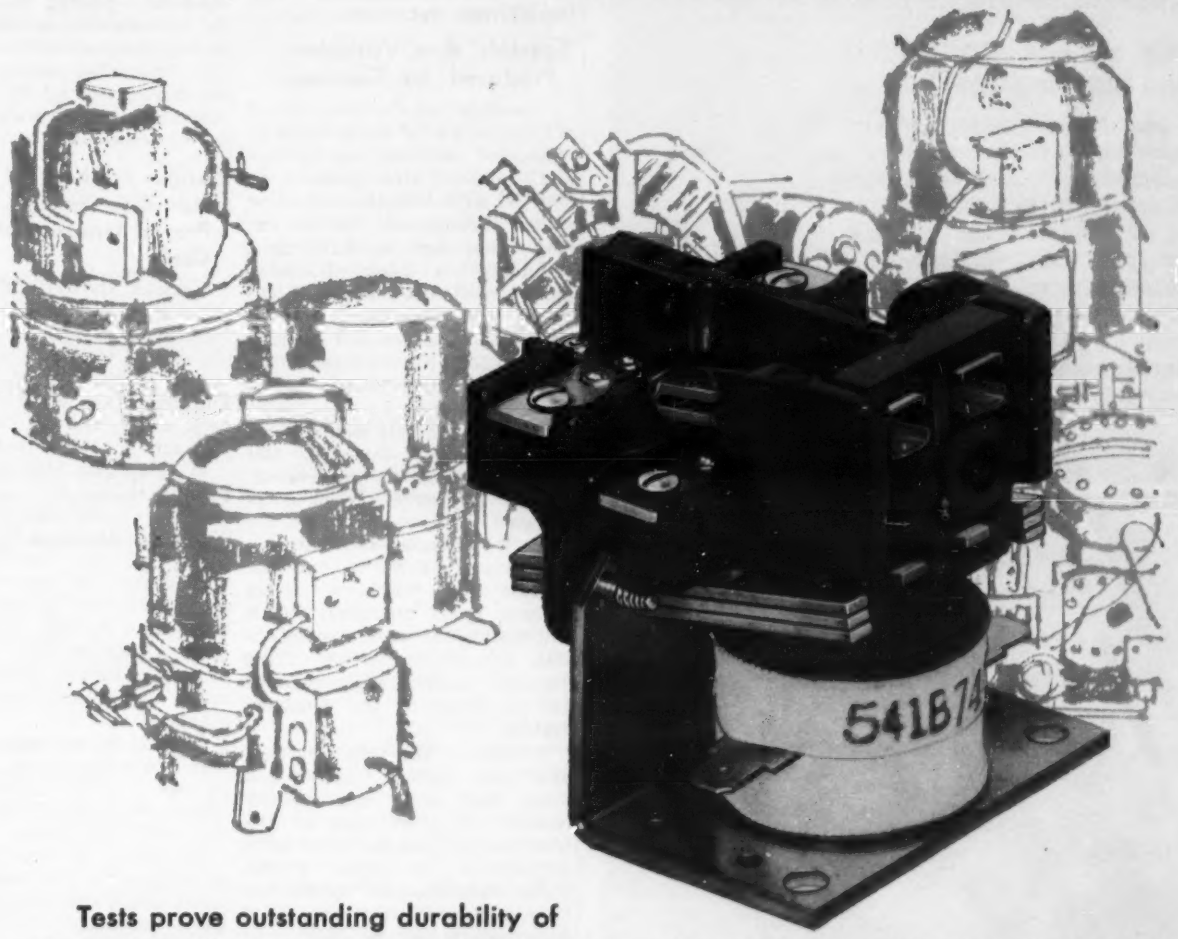

Tests prove outstanding durability of

GENERAL ELECTRIC'S NEW CONTACTOR

EXHAUSTIVE LOAD-LIFE tests (in excess of 300,000 operations—make LR and break 125% of full-load current) have proved General Electric's new magnetic line contactor will give you dependable, long life operation in your air conditioning systems.

Recent tests at General Electric's Appliance Control Department subjected a 3ARR8 line contactor to a 40-day test that simulated 10–20 years of installed service. Test engineers reported that the Company's new contactor—designed for central residential air conditioning systems—passed tests two to three times greater than those required by industry standards.

PRACTICALLY FREE from contact bounce, the new G-E contactor is used for applications such as starting and stopping compressor and fan motors and auxiliary heating circuits on central air conditioning systems.

One-half pound contact pressure per pole provides positive make. Available weld breaking force of over two pounds per pole provides positive break. And the "kiss-free" action for all pick up and drop out voltages eliminates the greatest cause of contact failure.

FOR MORE INFORMATION, contact your General Electric Apparatus Sales Office or write Section 740-141, General Electric Company, Schenectady, N. Y. (Ask for GEA-6803A.)

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MODIFICATION CENTER

Speeds Delivery of 'Special' Air Conditioners

By W. E. Petty,
Air Conditioning Div., Westinghouse Electric Corp.

Manufacturing engineers at the Westinghouse Electric air conditioning division plant have developed a unique approach to the problem of supplying "special" air conditioning apparatus —without disrupting production of the standard product line. They have established a "modification center" where all changes to standard production line models required by the firm's customers are made.

The modification center approach was initially developed approximately two years ago, refined as we gained experience with it, and is today working successfully and smoothly in the division's plant at Staunton, Va.

In order to better understand the system, the normal method of operation should be described with definitions of the terms "standard" and "special" as they are used at Westinghouse.

Standard Unit Defined

Essentially, a "standard" unit covers apparatus completely designed, engineered, manufactured for broad distribution. This in our case would cover a broad range of air and water-cooled units from 2-ton to 40-ton capacity, in packaged or split systems. These are generally supplied in voltages and frequencies most widely used.

For instance, a 2-ton water-cooled unit, arranged for single phase, 220-volt operation would be a "Standard." A 3-ton water or air-cooled unit will be considered "standard" if either single phase or three phase but only for 220-volt operation.

'Specials' Are Variations Produced for Customers

"Specials" on the other hand are variations of these units in voltage or frequency or peculiar and unusual arrangements in duct requirements because of or similar conditions. As an example, although we have as a "standard" a 3-ton air-cooled unit, some customers will require our 3-ton water-cooled unit less condenser and perhaps arrange for 440-volt three-phase operations. This would be a "special."

Another example would be in the heat pump category. We manufacture as "standard," 3, 5, and 7½-ton air-to-air heat pumps. However, in some regions water-cooled units are required and as a "special" we provide them with a simple reverse cycle operation which will enable the customer to obtain the heating cycle. This "special" is the requirement in certain areas of the southern states.

Incidently, the terms "standard" and "special" as we are using them apply more to our method of production of the units rather than our price form description. In other words, many units marked "special" or "non-standard" and the price form would also be considered "special." In this terminology, however, some items that are listed as "standard" in the price form may be handled as "special" within the factory due to their small volume.

Standard Items Usually Shipped from Stock

In general it is assumed that "standard" apparatus will be shipped from stock upon customer demand. The stock in turn is provided by means of a sales forecast which is firmed from 90 to 120 days in advance. From this forecast a production schedule is arranged and processed through IBM tabulating equipment which yields material requirements and production shop orders.

Material control processing the IBM information provides purchasing with the material requirements dated and material is ordered and stocked to support the production schedule. Prior to the conception and adoption of the Modification Center we also attempted to forecast the requirements for "specials," placing the units in the production schedule and having them available in stock. This invariably ended up with our having something that the customers did not want and not having something they did want.

WORK AT the Westinghouse Modification Center is performed on a "job-shop," low-volume basis. Some items listed in the catalogs as "standard" may be handled as "special" within the factory due to their small volume.

Various Methods of Handling Special Orders Proved Unsatisfactory, Costly

Various devices and "short circuits" of the system were tried, such as special handwritten orders to the shop and extreme expediting of material. The operation was unsatisfactory, costly, and did not provide adequate customer service.

In analyzing the problem it became apparent that there were two basic reasons for our difficulties. One was the inability to forecast such "specials" with any degree of accuracy. The second was the inability of handling in a routine volume production manner, small quantities of units which differed in a minor or major way from a standard unit.

In further analyzing the problem, it was found that over 70% of our "special" actually consisted of variations in voltage, frequency and phase.

Furthermore, variations could be reduced to the basic components which either in themselves were "standard" items in our stock or in our suppliers stock. In other words, and perhaps over simplifying, a large percentage of our so-called specials were assemblies of standard basic components.

New Approach Outlined

With this and other considerations in mind and through the close cooperation of sales, engineering, and manufacturing departments an entirely new approach was devised which consisted basically of the following:

1. Eliminate the formal sales forecast with respect to "specials" entirely.
2. Eliminate the supplying of complete detailed engineering information, formal production schedule, tabulating decks, and normal material and stores ledgers control.
3. Provide a self-contained manufacturing area to perform all operations except machining and complicated sheet metal work.
4. Set up a storeroom and material ordering in this separate manufacturing area.
5. Withdraw a standard unit from stock and modify by either adding or removing standard parts.
6. Provide engineering information in a simplified form which indicates simply the major components to be removed or added and eliminate details such as hardware, leads, and miscellaneous bolts and screws.
7. Provide a system which would give information rapidly to either sales or order service including delivery and cost.

How Order Passes Through Modification Center

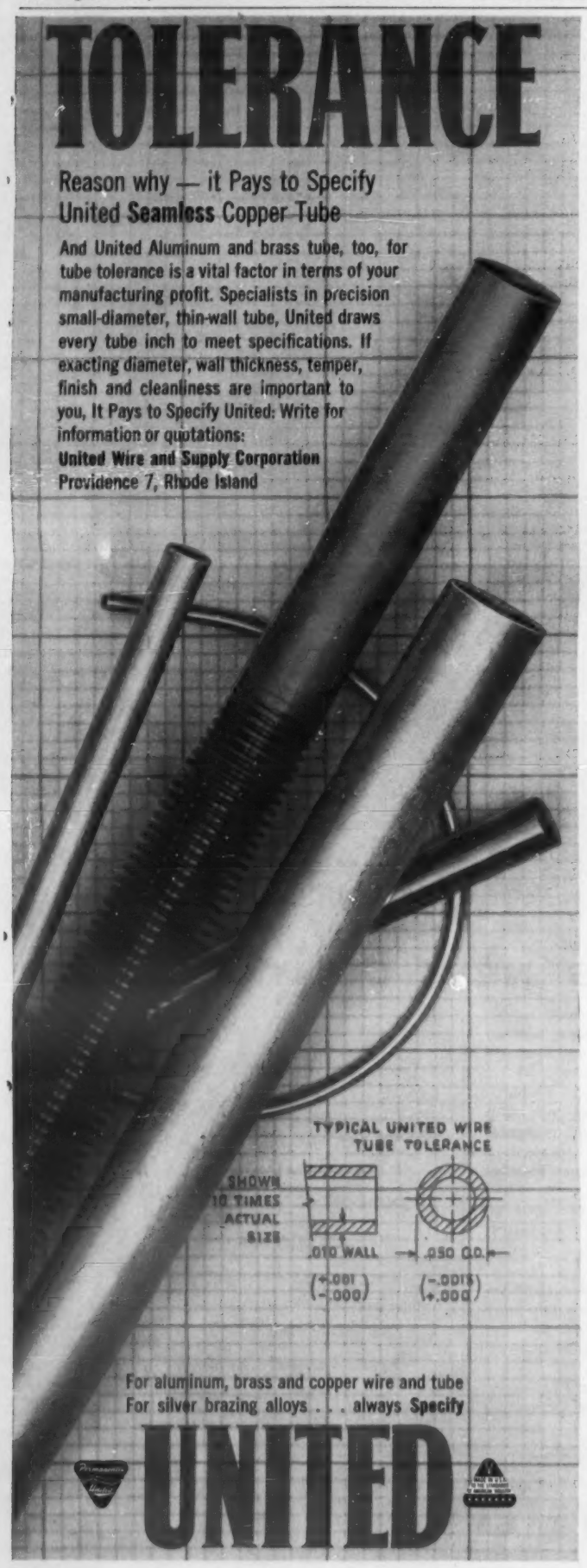
Such a department was set up approximately two years ago and a system devised and put into operation covering the points mentioned above. Now let's take a typical order as it is received from a customer and follow it through to see exactly how the system really does work.

Let us suppose it is Tuesday morning and a customer calls our Order Service Department and says he would like our standard, 3-ton, three-phase, 220-volt, water-cooled unit except that he wants it less the condenser and arranged three-phase, 440-volt operation. How soon can we make delivery and how much will it cost?

The Order Service correspondent would advise the customer that we can supply this and would give specific information by the following morning. He then initiates a simple single page form which indicates that he would like a standard 3-ton water-cooled unit which is identified by our drawing number but less the condenser and arranged for 440-volt three-phase operation and that there is in stock a 220-volt unit.

This form is forwarded directly to the foreman of the Modification Center who logs it as a negotiation and forwards the form to engineering. Engineering immediately develops on an 1½ by 11 tracing the drawing of the standard unit which is to be modified and indicates in two columns, the first of which specifies what is to be removed, in this case, the condenser, the compressor which is 220 volt, and the overload protection which is peculiar to the 220-volt compressor.

In the second column engi-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And United Aluminum and brass tube, too, for tube tolerance is a vital factor in terms of your manufacturing profit. Specialists in precision small-diameter, thin-wall tube, United draws every tube inch to meet specifications. If exacting diameter, wall thickness, temper, finish and cleanliness are important to you, It Pays to Specify United: Write for information or quotations:
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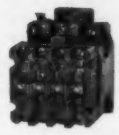
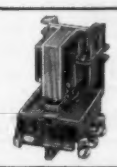
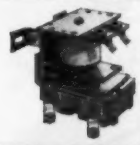


Type C—30, 40, 50 amp.
2-3-4 Pole 30 amp.—600 volts. 2-3-4 pole 40 amp.—230 volts. 2 pole 50 amp.—230 volts. Same mounting holes and coils for all ratings and pole forms.

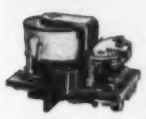


Type S-30—40 amp.
Low cost. Small size. Exceed rigid requirements of industry's largest users.

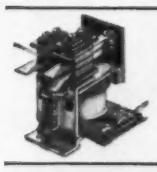


Type 80 Controller
Specific design for nominal 3 HP or 3-ton single phase compressors.

Type 75
Low cost power appliance relay. Dependably handles up to 6000 W. at 240 V, resistive load per pole or compressors 18a running 90a locked rotor at 250 volts.



Series 129000 Shunt Type Relay—SPNO, SPNC or NO-NC
Large double break contacts—Relay enclosed. Coils for standard commercial voltages. Other coils available for special application. For heater, fan control, general circuit switching, etc.



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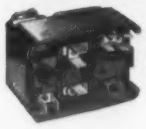

Series 128000 Potential Starting Relays
For starting single phase capacitor start compressors.

When RBM specially engineered its first air conditioning control, it quickly recognized the industry need for not just one . . . but for a *complete family*. So RBM has done the job. Now there is a single source for *all* air conditioning controls . . . each one meticulously engineered for its application. What's *your* requirement? See RBM.

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neering indicates the standard 440-volt compressor to be added and the overload to be added. Engineering then takes the original form which came from order service and his engineering sheet and has both of them duplicated in the drafting department and returns the originals and copies to the foreman in Modification Center.

Foreman Determines If He Can Meet Deadline And What Cost Will Be

The foreman in Modification Center checks his stock for the 440-volt compressor and overloads and his work load sheet and determines if he can make the modification in four days.

Then on one copy of the engineering sheet the foreman indicates the original standard cost of the unit, deducts the costs of the parts which is to be removed, adds the value of the material which he is to install and his labor at costing rate for making the conversion, and arrives at a new factory cost of the converted unit.

This cost, together with the delivery date, is put on the original sheet which came from order service and is returned to order service within 24 hours or in this case Wednesday morning.

It is now Wednesday morning, the order service correspondent has complete information including delivery and factory cost. He establishes selling price by formula and subsequently completes the negotiation with the customer. If the customer accepts and enters a firm order, the same original sheet which has previously been marked NEGOTIATION is now marked FIRM ORDER and is returned to the foreman of the Modification Center. With this complete information he immediately makes the necessary conversion and delivers the unit to the shipping department, identifying the unit by a special number to this conversion and for your customer order.

Wide Range of Conversions Has Been Made

Over a period of time a wide range of conversions have been made and accordingly a substantial amount of standard data has been accumulated and is kept in file in the Modification Center. Hence, many of the inquiries are answered directly from the Modification Center without the necessity of going through engineering for information.

In fact, the example given above would not have gone to engineering as it is a rather common modification. While the example given is perhaps very simple it illustrates the directness of the approach and the simplicity of the operation.

When the Modification Center was first established we expected that the lack of the formal forecast would present problems in determining the special material which we should order and maintain in stock so that it was available immediately for the various conversions. This is particularly true of two-phase or 50-cycle or odd voltage components required for apparatus for export or for certain areas, such as Philadelphia. The actual solution was arrived at by a number of actions.

1. By maintaining a renewal parts stock for service requirements available for immediate use.

2. By making substitutes of components which are equivalent in performance but may vary in size or shape, and

3. By maintaining in the Modification Center parts or electrical subassemblies. For instance we will stock various voltage and frequency combination of contactor coils which can be changed quickly rather than try to estimate complete starter or contactor requirements. In addition as we gain experience we use past history as a guide in stocking special components.

Depts. Coordinate Efforts

Perhaps even more important in the very close liaison which exists between Sales and Order Service and the Modification Center. For instance if we develop a new distributor or additional outlets in a two-phase area, Modification Center is alerted immediately and immediately develops proper part stock peculiar to a two-phase operation in anticipation of expected business.

Probably the greatest single contribution is the fact that there are only a very few people actively concerned with the operation with the result that it is possible to accomplish many things in a rather informal but still very effective manner.

An outgrowth of the development of the principal of modifying completed equipment has been the production of so-called "strip" models. As an example, it was found that in our production of 20 to 40-ton water-cooled packaged units that the variations occur essentially in the compressor and the condenser, and to a lesser degree the electrical characteristics. Accordingly, when standard units are built on the production line the quantity of units standard in every respect except for the omission of the compressor and condenser are also made, the panels loosely applied, and the units placed in our warehouse.

When an order comes in specifying a unit with non-standard condenser or compressor, or wiring, a strip unit is removed from the warehouse, the particular compressor and condenser combination required are added, wiring modified if necessary, the piping finished, the unit tested, and shipped.

This has resulted in getting as much of the unit built in standard production and minimizing the cost and work required in the conversion. We are doing further work in developing this principal which shows considerable promise.

Manufacturing Area And Facilities Described

A word about the manufacturing area and its facilities. Primarily it is an assembly area and is equipped with conveyors, work stations, piped acetylene and oxygen for brazing and welding. It is also equipped with power at various voltages, and through a relay line from a normal test area, can be supplied with odd voltages and frequency such as two-phase, or 50 cycle, and so forth.

In addition there is a test station in the area which permits units to be inspected and run prior to shipment. In fact, every unit is actually operated, inspected, and tested for performance.

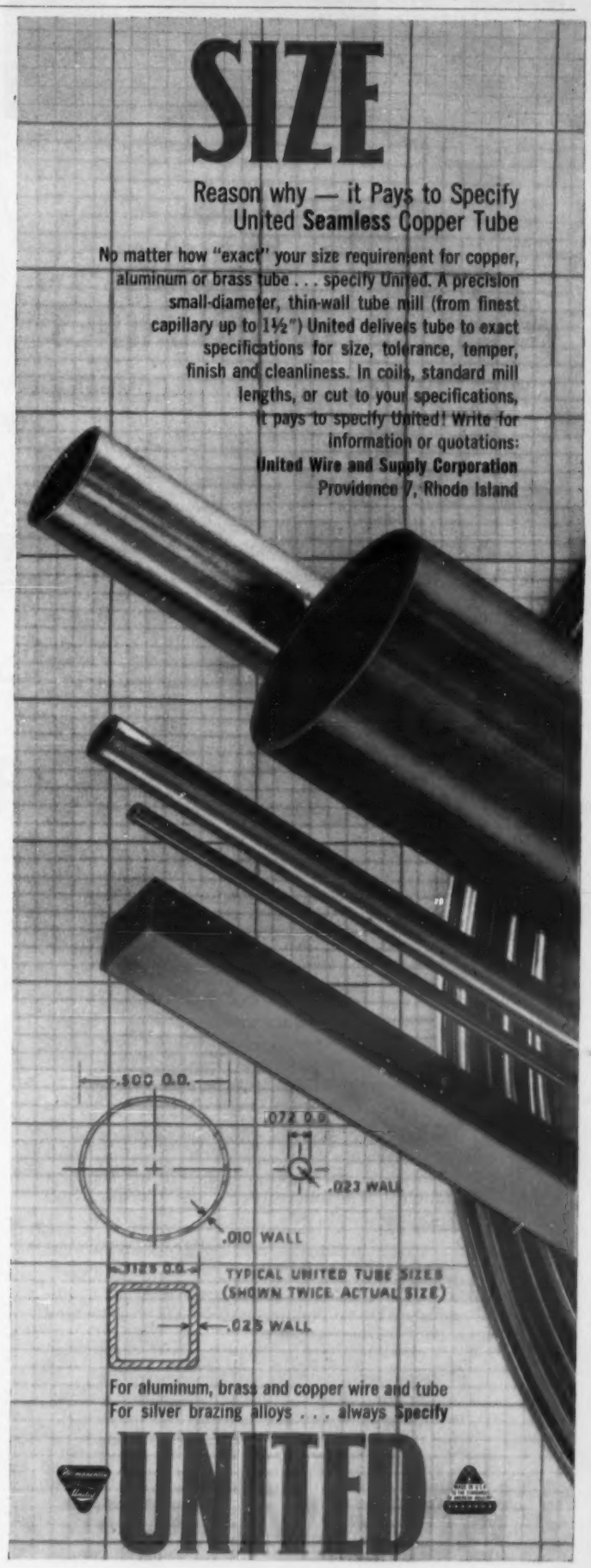
After nearly two years of operation we feel that while our present Modification Center may not be the best answer to the problems of producing specials it is certainly a mark improvement over our previous approach. We are giving customers definite delivery in reasonable time. Formal deliveries for some export equipment was as high as eight to 12 weeks, whereas we are now making deliveries at most in two to three weeks.

In fact, our average delivery time from receipt of order has averaged 11 working days which actually provides very nearly stock delivery.

From a cost standpoint, there seems to be tangible benefits. Since we removed this small volume special apparatus from our production lines we have gained in plant productivity.

The cost of a conversion has been steadily reduced as we gained more experience in the operation, the "strip" model being an example in that direction. From an inventory standpoint we have reduced by approximately 50% the amount of purchased material in stock that this operation requires against what we had in stock when it was operated as part of our regular standard production.

SIZE
Reason why — it Pays to Specify United Seamless Copper Tube
No matter how "exact" your size requirement for copper, aluminum or brass tube . . . specify United. A precision small-diameter, thin-wall tube mill (from finest capillary up to 1½") United delivers tube to exact specifications for size, tolerance, temper, finish and cleanliness. In coils, standard mill lengths, or cut to your specifications, it pays to specify United! Write for information or quotations:
United Wire and Supply Corporation
Providence 7, Rhode Island



For aluminum, brass and copper wire and tube
For silver brazing alloys . . . always Specify
UNITED

Fast, Efficient Handling of Materials and Supplies Cuts Drain on Profits

1. Through a front truck service door, trucks can back right into the parts department and load pipe and tubing. This serves to reduce the amount of handling of pipe, and facilitates the loading and unloading of the material.

HANDLING OF MATERIALS AND SUPPLIES might seem to be a relatively minor phase in the operations of an air conditioning dealership—but this area of operations can be a big drain of time and money if it is neglected.

In this instalment of the "picture story" series showing how Frymire Engineering Co. of Dallas has applied modern business methods and practices in the sale, engineering, and servicing of air conditioning systems, methods applied to the handling of pipe, parts and supplies, and refrigerants are pictured and described.

2. Another view of the front entry area, showing how pipe is handled through the service door. Pipe is handled in 20-ft. lengths, and a "straight shot" in and out simplifies receiving and shipping. All pipe cutting is done on the job.

TWO UNUSUAL OPPORTUNITIES

WITH OUTSTANDING GROWTH COMPANY

1 *PROJECT ENGINEER*
HOME-BUILDER PRODUCTS

We need an idea-man to invent and plan new products for the home. He should be oriented in mechanical or electrical engineering, have established background in new product development.

Our man is a self-powered thinker. He will take the initiative and generate ideas that are practical as well as new. He has a flair for marketability . . . that is, an intimate feeling not only for what the consumer needs but also for what the consumer will accept or how readily he'll part with his hard-earned dollars. And finally, our man will lead us down the right path in the development of home-builder products.

2 *PROJECT ENGINEER*
THERMO-ELECTRICAL DEVICES

This man will be a provocative idea producer, an advanced problem-solver, an experienced designer. He will concentrate on new product development in the thermo-electric field. We prefer an electrical engineer with research and development experience in thermo-electric heating and cooling.

Emerson Electric is a dynamic, highly successful growth company. Expansion continues rapidly and surely in the fields of electronics, electric motors, appliances and home-builder products. Gross sales of $90-million annually ($40-million five years ago) are expected to double in the next 5 or 6 years.

We are seeking key men for positions of tremendous importance. Openings will appeal to capable, hard working individuals who are ambitious to get the best for their families at a prime age . . . men who also want a vital, completely satisfying career.

Excellent salaries are augmented by a liberal benefits program, fine working conditions and a stimulating, progressive atmosphere. Beautiful residential areas surround our convenient suburban location. All moving expenses paid by the company.

Respond immediately. All replies strictly confidential. Send comprehensive resume, including salary requirements and inexpensive photo if possible, to R. L. Middleton.

EMERSON ELECTRIC
8100 W. Florissant — St. Louis 36, Mo.

3. Partial view of the Frymire parts department, showing numbered bins for parts and air filter storage on top of the bins. "By carrying minimum quantities of all vital parts and materials, we speed up our own operations," says Frymire's management. "It is particularly helpful when we have emergency calls during off-hours or on holidays."

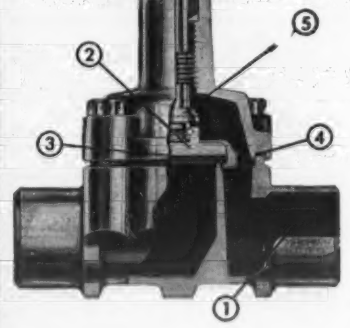
4. Refrigerant storage and refrigerant transfer rig has been designed to operate at top efficiency from the standpoint of both time and cost. Three types of refrigerant are carried in stock—Refrigerants-11 and 12, and C-500. Considerable savings are effected by buying refrigerant in large size drums, and then transferring to service size drums. This is done by means of gravity liquid flow out of large drums into small drums which have been chilled in a modified freezer. The small drums are immersed in an ethylene glycol solution and allowed to chill before the transfer operation is started. Refrigerant is controlled by a valve manifold and is weighed into small drums by means of a "trapeze" arrangement across the freezer. The man at the right is checking out stocks of sheet metal parts and sections used in venting systems.

ARE you in need of a "just right" man to fill a slot in your organization—the man you are looking for will be reading the

NEWS' CLASSIFIED ADS

- **FULL FLOW**
- ✱ **SELF ADJUSTING**
- **POSITIVE SHUT-OFF**
- ✱ **LEAK-LOK BONNET SEAL**
- **REPACKS IN USE**
- ✱ **TEMPERATURE PROOF**

KEROTEST PACKED GLOBE VALVES



"Packed" with quality and of rugged brass construction, these valves are ideal for refrigeration and air conditioning systems, oxygen (degreased), nitrogen, compressed air and liquified petroleum gases. Features: 1. Designed for full flow. 2. Floating disc for self-adjustment. 3. Quick seating disc for ease of operation. 4. Leak-proof with exclusive gasketing. 5. Repacks under pressure with positive back seating. Maximum operating pressure 500 p.s.i.—maximum temperature 200° F. See your Kerotest wholesaler.

R12 Series ⅞"-2⅛" Forged Brass
R10 Series 2⅛"-4⅛" Cast Brass

KEROTEST

KEROTEST MANUFACTURING CO.
2502 Liberty Avenue
Pittsburgh 22, Pa.

You Asked About It

From the many requests for information it receives, the NEWS will select and publish some of general interest.

Q. Recently, I had occasion to recharge some used Refrigerant-22 into a system. Short of silica gel, I filled my refillable drier with lye, which my one year of college chemistry indicated would make a beautiful drying agent.

During the charging, the dehydrator got so hot I thought it would explode; I burned my hand disconnecting it.

What happened?

C. W.—Slates Mills, Va.

The answer on this hot topic come from du Pont. R. C. Downing of the "Freon" Products Div., replies:

Lye is essentially sodium or potassium hydroxide or a mixture of the two and is a very strong alkali. The solid material is very hygroscopic and will pick up water very readily, although I certainly would not recommend its use for drying any of the "Freon" refrigerants.

Refrigerant-22 is very sensitive toward alkali and would very likely be decomposed when passed through lye. It would be decomposed to form carbon dioxide and the halogen salts of the alkali metal. Refrigerant-12 is very resistant to hydrolysis by alkali and could probably be passed through lye without any difficulty, although again I would not recommend it.

Wabash Publishes Catalog for 1960

CHICAGO — Wabash Corp. has announced publication of its new 1960 catalog.

This catalog introduces a complete line of all brass "Micro-Dri" dryers. In addition, the catalog shows the new Wabash silver solder flux in the 6-oz. non-breakable "Conolene" plastic bottle with the applicator brush attached to the cap, according to the firm.

The regular line of Wabash "Hi-Dri" dryers, solder connection dryers, solder connection strainers, capillary tubes and tubing, and other refrigeration accessory parts are also shown in the catalog.

Copies of the catalog may be obtained by writing Wabash Corp., 2300 S. Western Ave., Chicago 8, Ill.

Refrigeration Problems
And Their Solution
(As Written by Paul Reed)

Tracing 'Stoppage' In a System

Question:

A water-cooled ½-hp. unit was nearly out of charge. Its regular charge is about 14 lbs. of Refrigerant-12. I found the leak in the line, but I only had 5 lbs. of Refrigerant-12. I pumped the system down to a 22-in. vacuum and put the 5 lbs. in.

Then I opened the receiver valve, but my gauge did not rise and still showed a 22-in. vacuum. What would cause this?

Answer:

Apparently there is a stoppage of some sort between the receiver and the evaporator. Just where this stoppage is can only be guessed at; and it is going to be necessary for you to hunt around for it.

However, the following are some suggestions as to where the stoppage may be located.

The receiver service valve. This is a bit unlikely, but there have been cases in which the stem of the valve was broken. Thus, the valve may close, but when the stem is unscrewed to open the valve, the lower part of the valve stem stays on the valve seat.

It is more likely that the stoppage is in a screen, drier, solenoid, or other accessory in the liquid line, or in a screen of the expansion valve. It is possible that the needle of the expansion valve itself is stuck closed.

Start at the expansion valve and work back along the liquid line, by loosening flare nuts until you start to get liquid.

Quinn Electric Motors Moves to New Quarters

LONG ISLAND CITY, N. Y. —Quinn Electric Motors, Inc. has moved to larger and "easier-to-reach" quarters at 10-06 38th Ave., Long Island City 1.

Telephone numbers remain the same (offices: RAvenswood 9-5940; service department: RAvenswood 9-5941).

Quinn Electric motors is a direct factory authorized service station for a number of manufacturers.

Exhibiting at Dallas Show?

If so, tell the entire industry of the products you'll be showing . . . create special interest in your exhibit . . . by advertising in the Big February 1 Dallas Show Issue!

•

If you're not exhibiting, let your ad in the February 1 Dallas Show Issue represent your company at the Southwest Heating & Air-Conditioning Exposition!

•

In addition to the 23,000 weekly circulation of the NEWS, extra distribution of the February 1 issue will be made at the Show from the NEWS booth, #1312.

PLAN YOUR AD TODAY

AIR CONDITIONING HEATING & REFRIGERATION NEWS
450 WEST FORT ST.
DETROIT 26, MICHIGAN

NEW SUNISO REFRIGERATION OILS

TWO NEW OILS

IMPROVED SUNISO 3G is a new version of the famous all-around Suniso 3G—but now has greater stability and lower floc point.

NEW DUAL INHIBITED SUNISO 3G has two added inhibitors and gives unusually fine performance at extremely high temperatures.

NEW STABILITY

Both Suniso oils offer unusually high stability, even at high head temperatures. Their resistance to oxidation and their long life are important in effective equipment maintenance. Carbon residue is held to a minimum, and viscosity does not increase perceptibly.

NEW COPPER-PLATING RESISTANCE

The inhibitors in New Dual Inhibited Suniso 3G increase stability and copper-plating resistance *to a degree never before possible.* They virtually eliminate the problems of oil varnishes and sludges.

NEW LOW FLOC POINT

Both Suniso oils now have a floc point of −70° to −80°F. This enables compressor manufacturers to take full advantage of the low evaporation temperature (−40°F) of Refrigerant 22 without danger of plugups. And both oils are more compatible with refrigerants than ever before.

EXHAUSTIVELY TESTED

Both oils were tested in the laboratories of several well-known compressor manufacturers for high speed, full load, and continuous service operation. These extremely severe tests resulted in "Approval without any qualifications" in each case.

For the customer with standard, well-functioning equipment, Improved Suniso 3G gives excellent results. The customer with equipment problems—where other oils fail to combat copper plating, wet system—should use New Dual Inhibited Suniso 3G.

Suniso is distributed nationally by Refrigeration Division, VIRGINIA SMELTING COMPANY, 155 Jefferson St., West Norfolk, Va.

VIRGINIA® Chemicals

SUNISO REFRIGERATION OILS • ESOTOO • V-METH-L • CAN-O-GAS • VASCOCEL
PRESSTITE TAPE • PERMAGUM • WATER TREATMENT CHEMICALS
NATIONAL SALES AGENT & REPACKER FOR DU PONT'S "FREON" REFRIGERANTS

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TECH CENTER

by Frank J. Versagi, Technical Editor

Applied Electrical Theory (Part 5)

Practical Comparison Of Series and Parallel Circuits

The comparison between series and parallel electrical circuits can be centered around the grouped photographs at right and the chart on the next page.

First, notice that **in parallel** with two bulbs, the small electric motor operates, while **in series** with a single bulb, it cannot start.

Second, notice that other devices in a parallel circuit continue to operate when one device is removed from the circuit; in a series circuit, all devices become inoperative when any one device is removed.

Third, compare the full brightness of the three 25-watt bulbs in parallel with the very much dimmer same bulbs in series.

With the help of the comparison chart, we can discuss these observations and, in so doing, obtain a practical knowledge of the uses of series and parallel circuits. While separate discussion of volts, amps, and ohms is arbitrary, since all are mutually dependent in a circuit, such separation allows an easier understanding of the difference between the two types of circuits.

1. According to the comparison charts, voltage drop across each resistance in a **series circuit** is only **part** of the total voltage; in a **parallel circuit,** the voltage drop is the **same** across each resistance and **equals that of the voltage source.**

In the photographs, each of the bulbs and the motor in the parallel circuit is getting the full 120 volts supplied by the emf source. Each bulb, therefore, glows at full brilliance, and the motor designed for 120-volt application operates as it should. A single bulb in series with the motor, however, prevents the motor from starting even though the bulb is glowing at less than full brilliance because it is sharing the total supplied voltage with the motor. Actual voltmeter readings across the series circuit showed 95 volts across the bulb, 28 volts across the motor.

* * *

2. Current, in the comparison chart, is shown to be the same in all parts of the circuit in a **series hook-up;** current **divides** through all the branches in a **parallel circuit.**

An ammeter placed anywhere in the series circuit—in the supply line, in front of or behind any bulb—will give the same reading. Amp draw is equal, since there is only one path for the electrons to follow and they all must pass any given point in the circuit. For this same reason, any **open** in the circuit, caused by removal of a device or by a broken wire or by improper connections, will cause all current flow to cease, and no device will function.

An ammeter placed in any leg of the parallel circuit will read only the amps being drawn by that leg. If the resistance of each device is different, the current will be different in each branch. But an ammeter placed on either supply line to the parallel circuit will indicate the sum of all amps passing through all branches, since all the electrons flowing through the several resistors must come from and return to the emf source through the two supply lines. In this circuit, one or more branches may be electrically opened without stopping current flow through the remaining legs of the circuit.

A practical application of this difference in current flow in series and parallel circuits is the fuse. Figure 7 shows that a fuse placed anywhere in a series circuit will protect the entire circuit and all devices on it. Not at all like this is the parallel circuit where a fuse placed on any one branch of the circuit protects only the devices on that branch. To protect all the de-

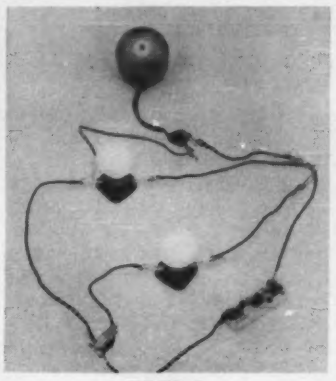


FIGURE 1

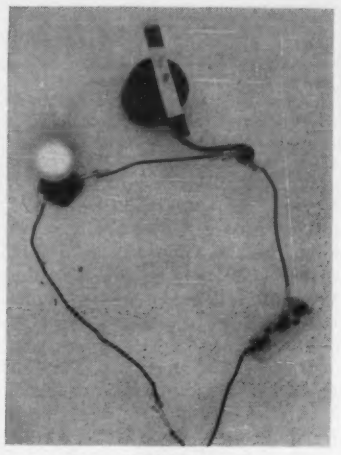


FIGURE 2

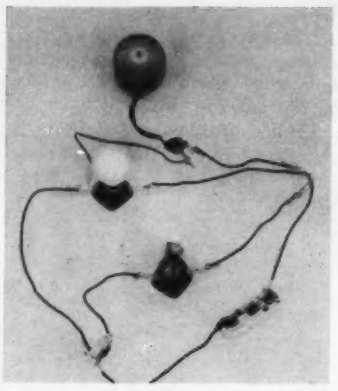


FIGURE 3

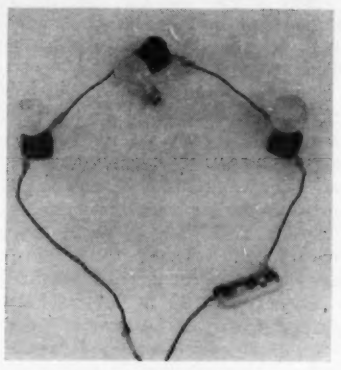


FIGURE 4

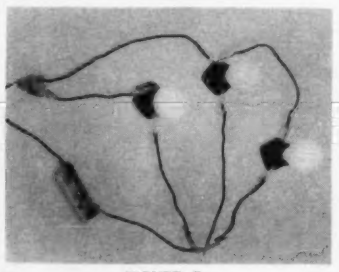


FIGURE 5

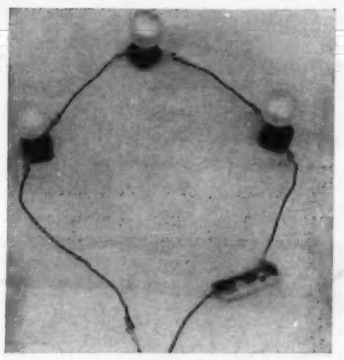


FIGURE 6

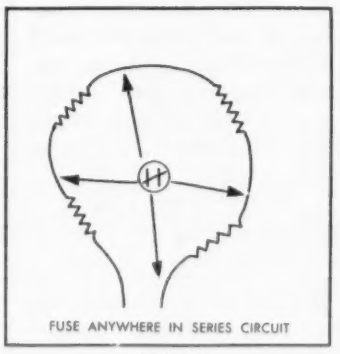


FIGURE 7

DO YOU FIND YOUR PUMP PROBLEM HERE?

A — Water Supply, Air Conditioning, Refrigeration, Cooling Towers, Sump Pumping, Etc.

B — Booster Service, Cooling Towers, Water Treatment, Water Circulation, Brine Service, Etc.

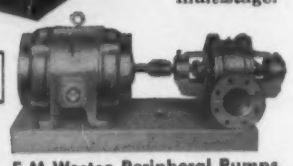
C — Hot Water Circulation, Ice Water or Brine, Clear Water, Boilers, Booster Service, Etc.

D — Hot and Cold Liquids, Refrigerants, Boiler Feed, Cooling Towers

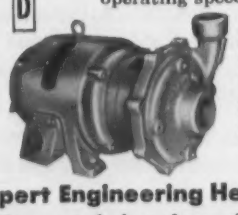
Then You'll Find Your Best Answer Here—

A — F-M Pomona Water-Lubricated Turbine Pumps
Easily installed, easy to adjust for varying field conditions. Available with wide choice of drivers.

B — F-M Split-Case Centrifugal Pumps
Capacities, pressures and sizes for any requirements. Single-stage or multistage.



C — F-M Westco Peripheral Pumps
Capacities to 200 gpm. Pressures to 900 ft. Sizes 1½" through 2½". Horizontal single-stage or multistage. Develops high pressure at normal operating speeds.



D — F-M Builtogether Centrifugal Pumps
Capacities to 900 gpm. Pressures to 525 ft. Sizes ¾" through 5". Single-stage or multistage.

FREE! Expert Engineering Help at Your Service

Be *sure* of low-cost, foolproof pumping installations that match your exact requirements... call in your Fairbanks-Morse Sales Engineer. Take advantage of his broad technical background and expert knowledge of pumps for air conditioning, plumbing and heating. Call him today, or write Fairbanks, Morse & Co., 600 So. Michigan Ave., Chicago 5, Illinois.

See Sweet's Product Design Catalog File for complete F-M Pump Line.

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a name worth remembering when you want the BEST

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RAIL CARS • HOME WATER SERVICE EQUIPMENT • MAGNETOS

OVER A HUNDRED EAGER BEAVERS

Yes, and everyone is ready, willing, and able to serve you right. For nearly three decades, we have been key suppliers to the trade. 24 of our key people have a total of 504 years' experience in this business. Why not take advantage of their very snappy service.

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SUPPLIES and PARTS

SAVE MONEY, time and effort by ordering from our new *Dependabook*, the most complete catalog of all. 232 pages. Over 10,000 items carried in stock. *Wholesale only.* Your orders filled really fast by mail, or they can be picked up at one of our six big warehouses.

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vices with a single fuse, the fuse must be placed on the supply line to the parallel circuit.

In a 100-amp domestic service box, separate 15 and 25-amp fuses protect each branch circuit while a 100-amp fuse guards the supply to all the branches.

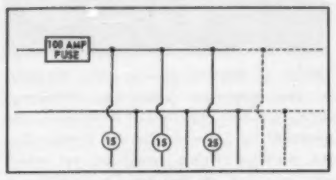

FIGURE 8

This difference in current flow in series and parallel circuits, then, allows engineers to design heating-cooling systems with compressor motors, fan motors, controls circuited in the way considered best for total design. Components tied together functionally may be made to cease operation all together in the event of a malfunction. Or, fans, pumps, other devices may be wired for continued operation should a compressor motor, say, fail.

3. From the chart, it can be seen that the total resistance in a series circuit is the sum of all individual resistances. Since this is so, the total resistance of the three bulbs in the series photograph is great enough to reduce amp flow to the point that each bulb cannot get enough current to glow at full brilliance. Three 25-watt bulbs, each with a resistance of 570 ohms, will allow

$$I = \frac{E}{R} = \frac{120}{(3 \times 570)} = \frac{120}{1710} = 0.07 \text{ amp.}$$

to flow.

In parallel, the total resistance is less than that of the lowest individual resistance:

$$\frac{1}{R_T} = \frac{1}{R_1} + \frac{1}{R_2} + \frac{1}{R_3} = \frac{1}{570} + \frac{1}{570} + \frac{1}{570}$$

$$\frac{1}{R_T} = \frac{3}{570}$$

$$3R_T = 570$$

$$R_T = 190\Omega$$

If we plug this total resistance into Ohm's law formula:

$$I = \frac{E}{R} = \frac{120}{190} = 0.63 \text{ amp.}$$

Across a 120-volt supply, then, three 25-watt bulbs in series draw 0.07 amps; in parallel, the bulbs share the total current and each draws 0.21 amp. (If the bulbs were not of equal wattages, the division of current would not be equal, but the total for the entire circuit would be the sum of their individual currents, as in this example.)

Among the discussions still to come in this series are articles on Power Distribution, Utilization Voltages, Induction Motors, Power Factor. Each practical section is preceded by basic theory in the right amount to make the discussion meaningful.

There Is No 'Best' Circuit

It is meaningless to dispute which circuit—series or parallel—is more useful, since each is indispensable to modern technology.

All but the most simple electrical circuits, indeed, make use of both types in what are logically called **series-parallel** circuits. On a refrigerated display case, the supply voltage is used to operate the compressor, the fans, the lighting circuit, the defrost heaters. Depending on manufacturer's design, each component may be wired to operate independently or together with any one or more of the other devices. The choice is made, in effect, by the electrical circuitry — by proper use of series and parallel circuits — alone and in combination.

Next: FUSES — PROTECTIVE DEVICES.

Air Filter Names Robert Zahn Vice Pres.

MILWAUKEE — Air Filter here has recently announced the appointment of Robert Zahn as vice president and general manager.

Zahn was formerly general manager of the Bell-Dyken Nash Co., Packaging Div., and before that patent engineer at Rockwell's Delta Power Div. His new position will include special work in the developing of new products.

COMPARISON CHART for SERIES and PARALLEL CIRCUIT

ELECTRICAL MEASUREMENT	SERIES	PARALLEL
EMF (Volts)	voltage drop across each resistance is only part of total voltage and depends on value of each resistor. Sum of these IR drops equals total supplied voltage. $V_T = V_1 + V_2 + V_3 + \ldots$	voltage across each resistor is the same and equals that of voltage source. $V_T = V_1 = V_2 = V_3 = \ldots$
CURRENT (Amps)	Same in all parts of circuit. $A_T = A_1 = A_2 = A_3 = \ldots$	Current divides through parallel branches. $A_T = A_1 + A_2 + A_3 + \ldots$
RESISTANCE (Ohms)	Total is sum of individual resistances. $R_T = R_1 + R_2 + R_3 + \ldots$	Total is less than that of lowest individual resistance. $\frac{1}{R_T} = \frac{1}{R_1} + \frac{1}{R_2} + \frac{1}{R_3} + \ldots$

Looking for a Business to Buy . . . ?
Check the Business Opportunities Section in the classified advertising columns.

Charge - Discharge - Test
UNITS ON THE JOB with
LINE TAP VALVES
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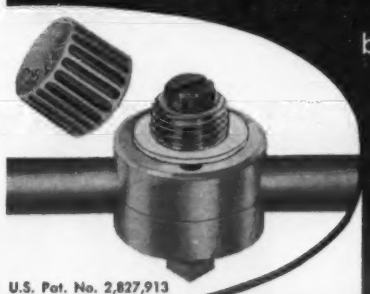

U.S. Pat. No. 2,827,913

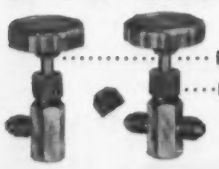
as installed on 3 ton Mathes air conditioner

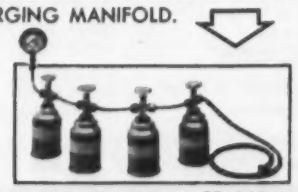
For charging, discharging and testing units quickly and easily without refrigerant loss. Designed to pierce the tubing without crimping or distortion. Line Tap Valves are available in 6 O.D. tube sizes: 3/16", 1/4", 5/16", 3/8", 1/2", and 5/8". ALL SIZES ARE ONE LOW PRICE.

CONTROL VALVES

CV-1—A lifetime tool designed to operate all size LINE TAP VALVES as well as WATSCO CAN TAP AND LINE PORT VALVES.—Quick coupled and installed without wrenches.

CV-2—The same Valve as the CV-1 but has a double port which enables you to connect a gauge and charging line in series to one or any number of packaged refrigerant containers, simultaneously. ELIMINATES THE NEED FOR A CHARGING MANIFOLD.





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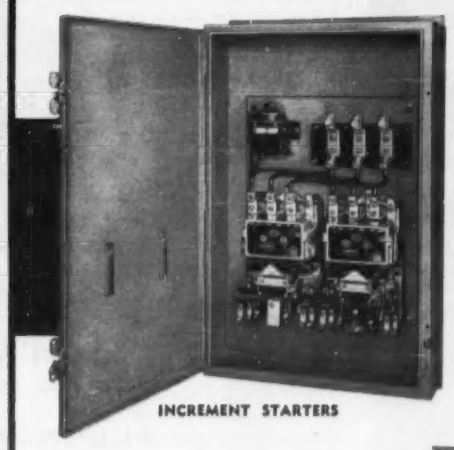
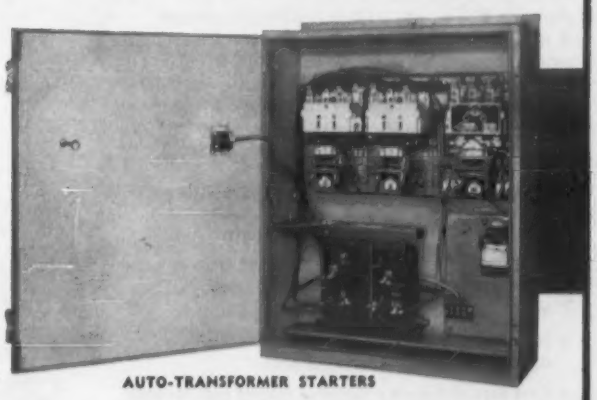

INCREMENT STARTERS

Specify **FURNAS** for your reduced voltage applications. Only Furnas Electric offers the exclusive "in-between" sizes 1¾ and 2½, plus encapsulated magnet coils, silver-cadmium oxide contacts and non-tracking arc chambers for long uninterrupted service.

INCREMENT STARTERS through 200 hp for part winding motors offer the most economical control for most refrigeration and air conditioning applications. Top quality components for long trouble-free life.

AUTO-TRANSFORMER STARTERS are furnished with closed transition starting as a standard feature, at the same price customers usually pay for open transition starting. You get more starter for your money.


AUTO-TRANSFORMER STARTERS

PRIMARY RESISTANCE TYPE STARTERS provide smooth acceleration, closed transition and high starting power factor. Designed for rugged use, they contain silver-cadmium oxide contacts, non-tracking arc chambers, tamper-proof thermal overload relays, and encapsulated magnet coils.

For more information, write Furnas Electric Co., 1111 McKee Street, Batavia, Illinois

A62

FURNAS ELECTRIC COMPANY
BATAVIA, ILLINOIS
SALES REPRESENTATIVES IN ALL PRINCIPAL CITIES

Atlantic City Exposition Picture Roundup

(Additional Picture coverage of the Exposition appeared in the Nov. 16, 23, and 30 issues of the NEWS.)

COMFORT FOR FIDO on the coldest of winter days is provided by this electrically heated doghouse, which Meier Electric Co. has put on the market.

WATCHING ENTHRALLED as Lorna Ringler demonstrates the safety of "Freon" refrigerants are Martin Silver (l.) and Joseph D. Chem of Ossining, N. Y., and (r.) Joe Hoopes, of DuPont. Photo by Irving Alter.

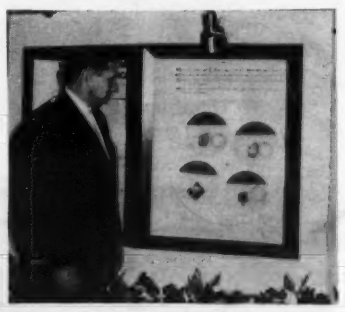
FRANK C. MOON, district sales manager of The American Brass Co., Pittsburgh (left), presents to David E. Hughes, an engineer for Superior Valve & Fittings Co., the portable Philco television set which was awarded at the Air Conditioning & Refrigeration Show. Hughes guessed the length of a one-piece coil of copper tube to be 10,924 feet and was the closest of several hundred entries.

VIKING GIRLS congratulate Jack W. Melcher of Fort Worth-Lennox as winner of the "Stereo" set by RCA. It was awarded by Viking Copper Tube Co. for the closest estimate of the length of tube in a roll exhibited at the booth. Melcher's guess 8,867 ft. 6 in.; actual length of tubing 8,865 ft. 9 in.

TWINS Marilyn and Martha Bross pose with new Brunner Multi-Drive compressor. The Bross twins made showgoers welcome at the big exhibit showing Dunham-Bush, Heat-X, and Brunner products. Of top interest was the new Brunner 7½ hp. through 100 hp. Multi-Drive compressor for industrial applications.

NORMAN F. GLOSSER (l.) receives antique flint lock dueling pistol made on May 13, 1813 from Jack Coltman of Kerotest Mfg. Co. The prize was awarded to Glosser, who is general manager of Aireco Supply Co., Washington, D. C., for guessing the closest to the actual established date of manufacture of the gun. Glosser's guess was May 12, 1813.

NEW CHARGING AND TESTING unit offered by Madden Brass Products Co. is demonstrated by R. H. Lacart, chief engineer (l.) to William Taylor and Richard Radcliff of Ebco Mfg. Co. Photo by Irving Alter.



NEW TEMPERATURE CONTROLS being offered by Ranco include new wide cycle automatic control series with adjustable or non-adjustable settings for automatic defrost; a control with a timer used to initiate defrosting; and a new high ratio control. Looking them over here is L. Zuck of Coldin Cabinet Co.

Introducing
KMP HERCULES
MOLECULAR SIEVE HEAVY DUTY DRIER
with Selective Filtration

The *new* KMP Hercules Drier will handle all systems up to 2 tons. Failures due to foreign materials such as acids, dirt and sludge are eliminated by means of four separate filter areas—exclusive with Hercules. A double screen at the inlet traps all solid matter harmful to the system, while 100% Molecular sieves adsorb moisture . . . will not cause failure in system by trapping oil additives that should pass through. This is *Selective Filtration.*

LOOK AT THESE SPECIAL FEATURES:

- Extra Heavy Wall for maximum working pressures.
- Extra Drying Capacity . . . will handle 108 drops of water at high operating temperatures (125°F) when used with F-12.
- Extra Filtering Capacity. Exclusive dual screen construction of 150 mesh monel cloth.
- Extra Ease of Assembly. Exclusive grooved ends for easy break-off at assembly.
- Extra Bonus Feature. No call backs for moisture or filter problems.

KMP KENMORE MACHINE PRODUCTS, INC.
LYONS, NEW YORK
Driers • Accumulators • Accumulator Driers • Strainers • Capillary Assemblies
CANADIAN REPRESENTATIVES: Refrigeration Supplies Ltd., 1687 Dundas St., London, Ont.

Don't Stock 2 When 1 Will Do . . .
ALLEN-BRADLEY
Selector Switches
good for either 2-position or 3-position operation

Change from 2-position to 3-position or vice versa . . . in 30 seconds!
Just loosen two screws, rotate a metal indicator 90°, retighten screws.

The same Bulletin 800 standard duty selector switch for 2-position use, left; 3-position use, above.

Nothing like it on the market! Watch your inventory. Don't stock two varieties when one will do. Nothing like it in quality, either! The maintenance free, silver contacts are in the cover—protected against dirt, careless wiring.

Allen-Bradley Co., 1313 S. First St., Milwaukee 4, Wis.
In Canada: Allen-Bradley Canada Ltd., Galt, Ont.

ALLEN-BRADLEY
Member of NEMA
Quality Motor Control

Michigan Warns Against Installing Unapproved Heaters

LANSING, Mich.—A warning to dealers against selling trailers equipped with panel and wall type bottled-gas heaters which have not been approved by nationally-recognized testing laboratories has been issued by the state Fire Marshal Div.

Regulations administered by the division prohibit use of units not approved either by the American Gas Association or by Underwriters Laboratories, division officials pointed out. Regulations also require display of the testing laboratory's seal of approval on each unit.

The warning was issued as a Muskegon, Mich. mobile home dealer awaited a municipal court trial on charges of violating the state fire prevention act by alleged sale and installation of a Thurm bottled gas heater.

The dealer pleaded innocent at his arraignment on the complaint, which alleged that the heater was installed without certification seal.

Meanwhile, the state Health Dept. was attempting to track down and warn owners of trailers equipped with a particular model Thurm heater which the department blamed for several deaths.

Room Cooler Buying--

(Concluded from Page 1, Col. 5)

distributor sales of room units had shown increases of 300 to 400% in September and October, and with that as a background, it could be presumed that distributor buying was heavy also.

Then when it became definite in November that the tax would fall on all units starting Dec. 1, a real buying rush by both distributor and dealer elements got underway. L & P Electric Co., New York City distributor for Fedders, reportedly sold more units at a recent open house than it did in the first four months of the year for the past several years.

Estimates Set 3-Month Output as High as 400,000

How much production of room coolers manufacturers got out before the Dec. 1 deadline is a matter of conjecture. Despite the steel strike, model changeovers and other problems, production was at a high rate among most of the major producers (at least one plant worked on Thanksgiving Day) and on the basis of the information available it seems likely that some 300,000 to 400,000 units were produced between Sept. 1 and Dec. 1.

The situation was summed up by G. Worthington Hipple, regional sales manager of the Fedders Corp., in a talk before the New York Sales Executive Club:

"For years the industry has been trying to get the retailer to buy his air conditioner requirements early," he declared. "Buy-back plans, extra discounts, and many other ingenious incentives that the minds of a thousand salesmen could devise have been trying to break this barrier.

"But all of this brainpower and hard sell wasn't nearly so effective as this piece of paper," Hipple said, holding up a copy of the announcement of the new tax regulation.

"From the standpoint of the industry," said Hipple, "the Dec. 1 effective date of the new tax comes at a very equitable time since every single manufacturer's inventory is at a record low mark and no one firm has any advantage."

'Retailers Have Some Matters of Concern'

While all of the manufacturers are "off" on an even start, the retailers have some matters of concern, Hipple added.

"Besides the shortage of merchandise, the retailer has a price increase of at least 10% facing him," said the Fedders sales executive. He emphasized "at least," explaining that with inevitable steel price increases as well as possible hikes in copper and aluminum, some manufacturers might see fit to jump the price even more than 10% right now rather than raise it again in a few months.

September, October Sales Of Air Conditioners Up Sharply In Some Areas

DETROIT—Utility and association reports indicate how air conditioner sales in September and October were up sharply in some areas over the same months in 1958. In some other areas, September sales were substantially higher than a year earlier but those in October were about the same or down from the 1958 month.

For example, distributor sales of air conditioners in the five-county Philadelphia area soared to 2,026 in September from 742 in the like month last year. In October, the distributors sold 2,876 units, compared to 718 a year earlier.

Sales for the first 10 months of 1959 were 54,166, against 42,374 in the like 1958 period, according to the Electrical Association of Philadelphia.

Sharp gains were also reported in the Washington, D. C. area for both months. In September, distributors sold 905 room air conditioners, against 125 the year before, and in October, the figures were 770 compared to 220.

The Electric Institute of Washington indicated that this brought sales for the first 10 months of this year to 33,385, compared to 20,734 in the January-October period last year.

In the southwestern area of Pennsylvania served by West Penn Power Co., room cooler sales by dealers rose to 164 in September from 62 a year earlier. Sales were up in October, too, totaling 4 compared with 19 in October, 1958.

The West Penn report showed first 10-month sales at 3,130, compared with 1,922 in the corresponding period of 1958.

According to a report by Union Electric Co., St. Louis, distributors in that area shipped 1,008 air conditioners to dealers in September, compared with only 351 in the previous September. However, their October volume was about the same as last year—570 units compared to 571.

Their shipments for the first 10 months totaled 17,022, off about 9% from the like period of 1958.

Distributors in the Cleveland area also had their ups (in September) and downs (in October). Reports compiled by the Electrical League of Cleveland show that September sales of air conditioners zoomed 85% over the previous September but declined 27% in October. However, sales for the year were still 57% ahead of last year.

A nine-month report by the Chicago Electric Association on distributor sales to dealers and builders in that area showed that room air conditioner volume in September totaled 3,236, a whopping rise of 365%.

And in the 32-county area served by Pennsylvania Electric Co., 116 air conditioners were sold by dealers, a gain of 127% over September, 1958.

Electric Power Board of Chattanooga reported that dealers in its area sold 412 room air conditioners in September, compared with 152 a year earlier. Kansas Gas & Electric Co., Wichita, said retailers in its area sold 150 room units in September, against 122 in September of last year.

FAHRENHEIT
Jas P. Marsh Corporation
Simply attach bracket and insert ball into socket. Adjust to best reading angle.
NEW!
5½ feet of tubing

An all-purpose, all-quality thermometer for any and every frozen food cabinet...that's the

MARSH *Universal*

FROZEN FOOD CABINET THERMOMETER

Here is Marsh quality, accuracy and beauty at a moderate price. Small and compact, but with a bold, easy-reading 2½" dial having increased scale divisions in the working range. Accurate to plus or minus one division over entire scale—not affected by ambient temperature.

Its white enamel case with nickel plated ring is an adornment to any cabinet. Note ease of installation pictured above ...also unique ball and socket joint providing adjustment to best reading angle. Thermometer is standard with 5½ feet of nickel plated capillary tubing. Write or, better still,

see your wholesaler

MARSH INSTRUMENT COMPANY

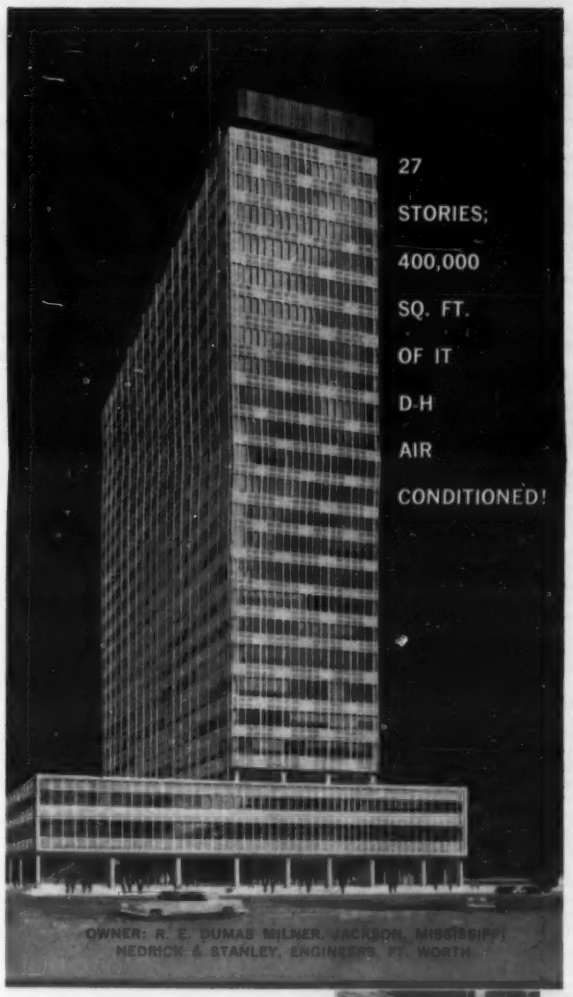
Division of Colorado Oil and Gas Corporation

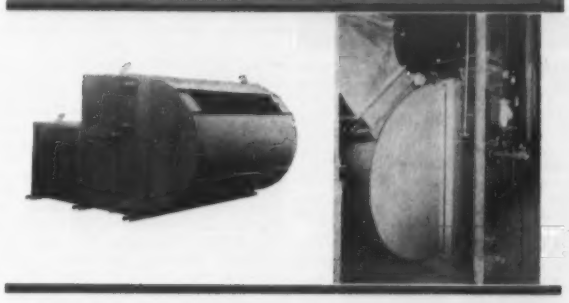
Dept. D, Skokie, Ill.

Marsh Instrument & Valve Co. (Canada) Ltd., 8407 103rd St., Edmonton, Alberta
Houston Branch Plant, 1121 Rothwell St., Sect. 15, Houston, Texas

MARSH *Refrigeration Instruments*

Thermometers • Gauges • Water Regulators • Solenoid Valves • Heating Specialties


27 STORIES;
400,000 SQ. FT. OF IT D-H AIR CONDITIONED!
OWNER: R. E. DUMAS MILNER, JACKSON, MISSISSIPPI
HEDRICK & STANLEY, ENGINEERS, FT. WORTH



24 PACE-SETTING NEW D-H HIGH PRESSURE H.C.D. AIR HANDLERS DO IT ...AT NEW KROGER BLDG., CINCINNATI.

NEED LITERATURE?

d-h SINCE 1918

drayer-hanson

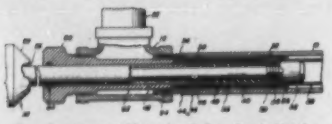
DIVISION NATIONAL U.S. RADIATOR CORP

3301 MEDFORD ST., LOS ANGELES 63, CALIF.
CABLE: CLICONI, LOS ANGELES

PATENTS

Week of July 7 (Concluded)

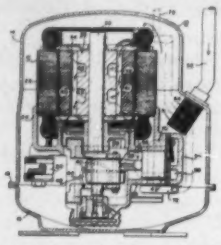
2,893,465. TOOL FOR INSTALLATION OF BY-PASS ASSEMBLY FOR SERVICE PIPE. Frank H. Mueller and Walter J. Bowan, Decatur, Ill., assignors to Mueller Co., Decatur, Ill.



1. An expanding tool for installation of a by-pass assembly to be instered through a T and into a service pipe connected to one end thereof, the assembly having expansible portions adjacent both of its ends, comprising: a tubular member detachably securable to the other end of the T and having an extension adapted to extend through the T and into the pipe to serve as an abutment for the rear end of the by-pass assembly. . . .

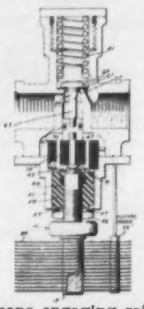
2,893,626. REFRIGERATING APPARATUS. John Weibel, Jr., Dayton, Ohio, assignor to General Motors Corp., Detroit, Mich.

2. In a sealed motor-compressor unit, a main frame including a compressor having a suction inlet, a motor supported by said frame and including a drive shaft operatively connected to said compressor, said motor comprising a stator carried by said frame and a rotor disposed within said stator, said rotor having a plurality of internal muffling chambers therein. . . .



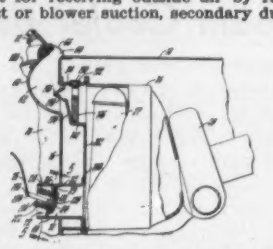
2,893,638. THERMOSTATIC CONTROL VALVE. Victor E. Rimsha, Van Nuys, Calif., assignor to The Dole Valve Co., Morton Grove, Ill.

1. In a thermostatically controlled modulating valve, a valve body, an inlet into said valve body, an outlet from said valve body, an orifice between said inlet and said outlet, an annular flat valve seat extending about said orifice, a poppet valve having a valve face cooperating with said seat, spring means engaging said valve with said seat, a thermal element moving said valve away from said seat upon predetermined rises in temperature. . . .

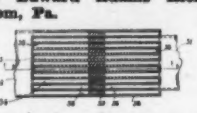


2,893,700. HEATING, VENTILATING AND AIR CONDITIONING SYSTEMS FOR VEHICLES. Henry W. Boylan, Harry C. Doane, and Arman E. McManama, Flint, Mich., assignors to General Motors Corp., Detroit, Mich.

An air conditioning and heating system for an automotive body having a windshield, fire wall, engine compartment and a passenger compartment, said system including primary duct means extending downwardly from forward of the windshield base and then forwardly toward said engine compartment for receiving outside air by ram effect or blower suction, secondary duct means including an evaporator core and a heater core arranged in series with a multi-speed blower. . . .



2,893,702. HEAT EXCHANGE APPARATUS. Edward Adams Richardson, Bethlehem, Pa.

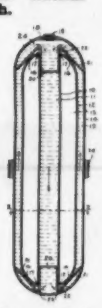


1. In a heat exchanger, a plurality of passages with adjacent passages adapted to carry hot fluids and cool fluids respectively, a common wall of heat conducting material separating adjacent passages, a partition of a rigid body of permeable material dividing each passage, said partitions being bonded in good thermal contact to their adjacent walls in substantial alignment with each other and supporting said walls. . . .

2,893,705. HEAT EXCHANGER. Anthony A. Fennell, Homewood, Ill.

1. A heat exchanger comprising tube means for a first fluid stream which enters at a first temperature, said tube means being disposable in a second fluid stream which approaches a leading portion of the tube means at a second and different temperature, one of said temperatures being sufficiently high to cause injury to the heat exchanger in the absence of cooling thereof. . . .

2,893,706. CAPSULE TYPE HEAT EXCHANGER. Arthur Leroy Smith, Seattle, Wash.

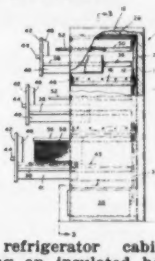


A heat exchange unit comprising an innermost tube forming an axial fluid passageway of uniform area from end to end thereof for descending cooled fluid; an intermediate tube of larger cross sectional size than said innermost tube disposed around said innermost tube in spaced relation therefrom and having inwardly curved end portions sealed to the end portions of said innermost tube providing a heat insulating chamber between said innermost tube and said intermediate tube....

2,893,772. LOCK FOR REFRIGERATOR DOORS. Chester P. Edwards, South San Francisco, Calif.

1. A lock for refrigerator doors and the like, comprising an elongated lock housing adapted to be fixed to the outside of a door, an elongated handle, pivoted at one end to said housing, swingable outwardly of said housing, and having a finger directed inwardly from said one end, a rod reciprocable longitudinally of said housing and having one end in engagement with said finger, a latch pivoted at a point to said housing, a pair of pivotally connected, generally longitudinally extending links. . . .

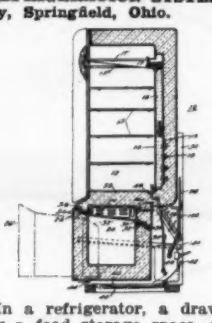
2,893,805. DRAWER-TYPE REFRIGERATOR DEVICE. James T. Ferguson, Shreveport, La.



1. A refrigerator cabinet device comprising an insulated housing having a plurality of vertically arranged refrigerator compartments, each compartment being defined by the side and rear walls of said housing and an upper and lower refrigerator partition, there being an opening in the front wall of said housing, each refrigerator partition comprising a hollow casing having upper and lower spaced apart walls between which a refrigerator coil may extend. . . .

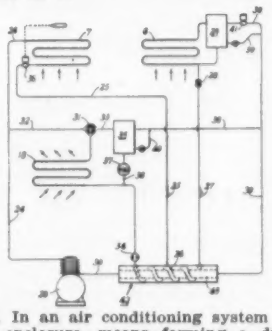
Week of July 14

2,894,374. DEFROSTING CONTROL IN REFRIGERATION SYSTEM. Glenn Muffly, Springfield, Ohio.



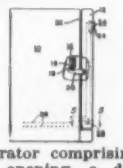
1. In a refrigerator, a drawer providing a food storage space, a refrigerating system including an evaporator for cooling said space, means for defrosting said evaporator while said drawer is open, means so constructed and arranged as to reclose said drawer, and means for retaining said drawer in its open position, the last said means being releasable in response to a slight manually applied force and also in response to completion of a defrosting period. . . .

2,894,375. AIR CONDITIONING AND HEAT PUMP SYSTEM. Robert W. Waterfill, Upper Montclair, N. J., assignor to Buensod-Stacey, Inc., New York, N. Y.



1. In an air conditioning system for an enclosure, means forming a dual-

2,893,736. REFRIGERATOR DOOR CONTROL. Verlos G. Sharpe, Dayton, Ohio, assignor to General Motors Corp., Detroit, Mich.



A refrigerator comprising, a cabinet having an opening, a door provided with an elastic door seal about its periphery arranged to engage the front of said cabinet for closing and opening, yieldable holding means associated with said door and cabinet for yieldably holding said door in engagement with said cabinet and for compressing said door seal when said door is in a closed position. . . .

CLASSIFIED ADVERTISING

RATES for "Positions Wanted" $7.50 per insertion. Limit 50 words. 15¢ per word over 50.

RATES for all other classifications $10.00 per insertion. Limit 50 words. 20¢ per word over 50.

ADVERTISEMENTS set in usual classified style. Box addresses count as five words, other address by actual word count. Please send payment with order.

POSITIONS WANTED

MECHANICAL ENGINEER—18 years experience in air conditioning, heating, and refrigeration systems. Broad experience in all types of lay-out, design, and application; as well as a good sales record. Canadian citizen, married, and 40 years old. Send resumes to GEORGE L. SENECHAL, 644 Kennedy Road, Toronto, Ontario. AM 1-9437.

COMMERCIAL LOW pressure refrigeration service man, now self employed, desires employment with progressive refrigeration company, or maintenance firm. Twenty years experience, available about February. Florida area favored. Please reply to BOX A6408, Air Conditioning, Heating & Refrigeration News.

SERVICE EXECUTIVE with broad industry experience in major appliances; commercial; industrial & air conditioning equipment to 125 tons, desires field service engineer, or service-sales position. Excellent reputation in conducting sales-minded service contracts with distributors, customers, sales representatives, dealers & national accounts. Exceptional training ability in formal & on-the-job service schools. Talents include accomplished public speaking, and extensive public relations experience. Mature, intelligent, personable, and will travel. BOX A6410, Air Conditioning, Heating & Refrigeration News.

POSITIONS AVAILABLE

EXPERIENCED HEATING & air conditioning sales engineer to cover Central Illinois representing Chrysler Airtemp Distributor for packaged residential and commercial equipment—terrific opportunity. Salary, commission, profit sharing. State qualifications, references, starting wages. Rush to B. MELNIK, P. O. Box 1342, Decatur, Illinois. All replies confidential.

WANTED: REFRIGERATION service man for year round employment from twenty to forty-five years of age. Top wages, chance for advancement. Established Carrier dealer. Good year round climate conditions. Write CULVER REFRIGERATION, 1460 Third Avenue, Yuma, Arizona and give your background.

DISTRIBUTORS: MANUFACTURER of refrigerated, self-service milk cabinet especially designed for school and institutional use, needs qualified distributors. Prefer dealers doing business with schools. Choice territories available. DISPLAY-O-MATIC, INC., P. O. Box 338, Bradenton, Florida.

MANAGER FOR Carrier wholesale distributor. Requires hard work, management ability, sales and engineering background. Provides opportunity to build and grow with the business to match your own efforts. Established company, medium-sized territory, Northwest Ohio and Northeast Indiana. Our references: Carrier Corporation and Ohio Citizens Trust Company. Please write your qualifications briefly if interested in talking together. James Hausman, THE HAUSMAN STEEL COMPANY, 300 Sandusky Street, Toledo, Ohio.

AIR CONDITIONING and heating service man. Knowledge of control wiring, air distribution, heating and refrigeration cycle of water cooled, air cooled and heat pump equipment. We install and service all makes of heating and air conditioning equipment. Permanent employment for right man. Send qualifications to LA BREA HEATING & AIR CONDITIONING COMPANY, P. O. Box 922, ORegon 9-3491, Inglewood 3, California.

MANUFACTURER'S REPRESENTATIVE for commercial refrigerator manufacturer. Several desirable territories open. Activities to include contacting distributors, dealers and food chains. Give details as to experience, territories in which you can give complete coverage, and industry references. Replies held in confidence until interview. BOX A6237, Air Conditioning, Heating & Refrigeration News.

A DISTRICT supervisor for the Minneapolis-St. Paul area by manufacturer of commercial refrigerators. Preferably he is selling to food chains, super markets, wholesale grocers and refrigeration dealers. He may be presently a refrigeration distributor or employed by a manufacturer, but desirous of improving his situation by locating elsewhere or just anxious to cash in on experience and make more money for himself. If you are the man, send a brief resume of experience to BOX A6392, Air Conditioning, Heating & Refrigeration News.

FIELD SERVICE Engineer—Our company is growing and expanding. We need and have opportunity for a capable, experienced, refrigeration service man, under 40 years to handle field service engineer responsibilities in limited territories in New England and Middle Atlantic States. Must be free to travel. Food store experience preferred. Willing to move at our expense, if necessary. High school (or better) education. Give full details, with five references, and send photograph with first letter. Applications without photographs will not be considered. Salary, expenses, insurance, welfare, and other benefits. BOX A6402, Air Conditioning, Heating & Refrigeration News.

SALES ENGINEER to sell heat transfer coils to manufacturers of heating, air conditioning and refrigeration equipment in Ohio, Indiana and Kentucky. Leading manufacturer can offer excellent salary, expenses, bonus and liberal benefits to right man. Engineering degree and sales experience preferred. Send full details to BOX A6407, Air Conditioning, Heating & Refrigeration News.

MANUFACTURER'S AGENTS—Our full line of light commercial and residential heating and air conditioning equipment is open in the states of Ohio, Indiana, Alabama. We are an old line company, AAA rated and financially responsible. Our product is excellent and priced to sell in today's market. We want to connect with a top flight agent organization now actively covering the trade and one who has a real following among distributors, dealers and contractors who service the air conditioning field. If you feel you can offer what we want and wish to connect with a progressive company we will appreciate your prompt answer directed to BOX A6409, Air Conditioning, Heating & Refrigeration News.

DESIGN ENGINEER—Degree in mechanical engineering or equivalent in science required. Successful applicant will be 4 to 5 years out of college with experience in air handling phase of air conditioning industry. Assignment will be development of air handling units and some water and direct expansion, plus coil heat transfer work. Midwest location. Please submit complete resume to BOX A6410, Air Conditioning, Heating & Refrigeration News.

EQUIPMENT WANTED

WANTED: MANUFACTURERS surplus, outdated or obsolete refrigeration items—expansion & water & shutoff valves, controls, relays, dehydrators, units, tubing, fittings, etc. All sales on a cash closeout basis, large or small quantity. Write or call: COMMERCIAL CONTROLS CO., 257 East 3rd Street, New York 9, New York, ORegon 3-7210.

EQUIPMENT FOR SALE

AJAX ICE Machine parts—We have purchased the inventory of parts, plus all tooling, for the Ajax Electric Iceman, formerly manufactured by Servel, Inc. We are now furnishing replacement parts, for all models including Ajax Pebble Machine. Catalog & prices available. AJAX EQUIPMENT CO., INC., 73 Pine Street, Montclair, N. J.

SEALED UNITS Re-manufactured equal to new all makes domestic and commercial. One year guarantee against defective workmanship and material. Send for free terminal color guide and dome exchange chart. Price list included. Some territory still open for distributors. BONDED HERMETIC RE-MANUFACTURING CO., INC., 608 Coney Island Ave., Brooklyn, N. Y., GEdney 5-8680.

SERVICE DEALERS—Did you know you can have that out of warranty Servel gas refrigerator unit rebuilt by the authorized factory rebuilding station, at a cost to you of only $42.00 F.O.B. our plant; one year warranty. Most models available on exchange basis. SCHREIBER ENGINEERING, INC., 8681 Otis, South Gate, California.

BUSINESS OPPORTUNITIES

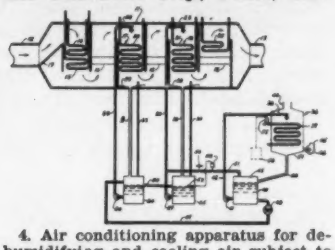
A REAL buy; commercial refrigeration and air conditioning sales and service business in Southern California. A fully equipped and well established going business including all trucks, tools, parts, and equipment, also buildings if desired. Reasonable terms can be arranged. For complete information write BOX A6411, Air Conditioning, Heating & Refrigeration News.

MANAGER OF RESIDENTIAL AIR CONDITIONING & HEATING SALES

The Trane Company has an immediate opening for a young man to be a product manager for the fast growing line of residential cooling and heating products. This is a responsible position with unlimited potential at the home office level. Experience is necessary in residential cooling and warm air heating sales and distribution including successful personal selling experience calling on installing outlets. Reports to Division Manager of Package Equipment Sales. Salary open. Contact G. R. Hassell, Manager Staff Employment. The Trane Company, La Crosse, Wisconsin.

duct air supply system formed by a hot air duct and a cold air duct and means to direct a stream of air from a common source to said ducts thereby to maintain constant supplies of air in both of said ducts, a refrigeration system having a condenser in said hot air duct and an evaporator in said cold air duct and also having an auxiliary unit which is adapted to act alternately as an auxiliary condenser and evaporator. . . .

2,894,376. AIR CONDITIONING APPARATUS AND METHOD. Gilbert A. Kelley, Toledo, Ohio, assignor to Surface Combustion Corp., Toledo, Ohio.

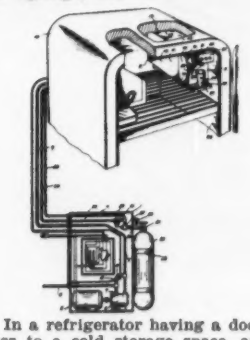


4. Air conditioning apparatus for dehumidifying and cooling air subject to non-atmospheric pressure comprising, in combination: a pressure vessel; a cooling coil through which coolant is passed, located in said vessel; contactor spray means for spraying hygroscopic liquid over said coil; means for moving air to be conditioned through said vessel in contact with said cooling coil and hygroscopic liquid; a contactor sump located below said vessel; drain means for collecting in said contactor sump liquid from said contactor spray and for equalizing the pressure in said vessel and said contactor sump. . . .

Editor's Note: Patents described here have been selected from the "Official Gazette" of the United States Patent Office. They offer only a brief summary of each invention. In some instances only the first part of the digest is presented.

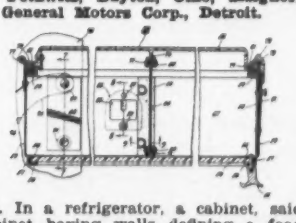
Printed copies of patents, reissued patents, and patent designs may be secured from the Patent Office; patents and reissues are 25¢ each, while designs are furnished at 10¢ each. Address orders to: Commissioner of Patents, Washington 25, D. C.

2,894,377. BEVERAGE DISPENSING APPARATUS. Horace E. Shikles, Jr., Leawood, Kans., and Loye E. Watts, Blue Springs, Mo.



5. In a refrigerator having a door for access to a cold storage space, an apparatus for dispensing a cold drink through a dispensing nozzle and for maintaining the component parts of the drink in refrigerated condition prior to the dispensing operation, a cooled storage unit comprising, a housing having connected bottom, side, top and rear end walls of material having relatively high heat conductivity. . . .

2,894,378. REFRIGERATING APPARATUS. Orson V. Saunders and Carl P. Petkwitz, Dayton, Ohio, assignors to General Motors Corp., Detroit.



1. In a refrigerator, a cabinet, said cabinet having walls defining a food storage chamber therein, a refrigerating system associated with said cabinet including an evaporator for cooling air in said chamber, a receptacle within said chamber, a partition extending across the interior of said receptacle and dividing same into a first compartment and a second compartment each having walls thereof directly exposed to the cool air in said chamber. . . .

(To Be Continued)

Servicing Automobile Air Conditioners

(Vol. 4 — 1959 Models)

BY C. DALE MERICLE

Like the preceding three volumes in this series (which are available in handy manual form), these articles are intended for the *experienced* refrigeration mechanic, not the novice, and are primarily designed for emergency service.

Detailed step-by-step instructions on adjustment and replacement procedures are purposely omitted, partly to discourage the "do-it-yourself" clan and partly because major repair jobs for the most part will be performed by authorized service agencies of the manufacturers without whose cooperation this series could not have been written

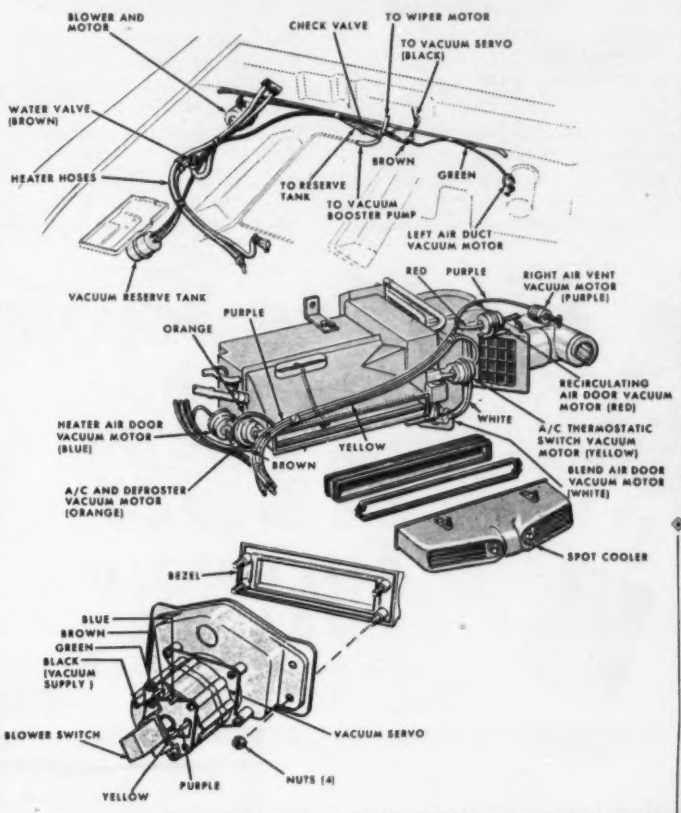


FIG. 1 shows location of various components in Edsel Dial-Temp evaporator assembly and vacuum motor control system.

EDSEL

M-E-L Div.
Ford Motor Co.
Dearborn, Mich.

There are two types of air conditioners in the 1959 Edsel line: "Dial-Temp" and "Polar Air."

Both employ the same basic arrangement of compressor and condenser, and both are controlled by an adjustable thermostat cycling a magnetic clutch, but the evaporator assemblies differ.

Dial-Temp evaporator is built into the car heating system, and vacuum motors are employed to position the thermostat and the various air dampers involved. The Edsel Dial-Temp system is, in fact, virtually identical with the Mercury "Climate Dial" built-in air conditioner.

The Edsel Polar Air evaporator assembly is a hang-on type unit entirely independent of the car heating system. This unit is the same as the 1959 Ford "PolarAire" under-dash unit, at least as far as service procedures are concerned.

Dial-Temp System

Because the Edsel Dial-Temp is essentially the same as the Mercury Climate Dial, readers are referred to the section on Mercury for a complete description of design, operation, and servicing of the Edsel Dial-Temp.

FIG. 2—Edsel Dial-Temp control panel is mounted in dash.

There are minor differences, however, in the location or styling of some of the Edsel Dial-Temp components.

Fig. 1 shows important details of the Dial-Temp evaporator assembly and vacuum lines and motors.

Control panel for the Dial-Temp system is shown in Fig. 2. Although its styling differs from the control panel for the Mercury Climate Dial, both operate exactly the same way.

Dial-Temp air conditioner and heater air flow schematic is shown in Fig. 3.

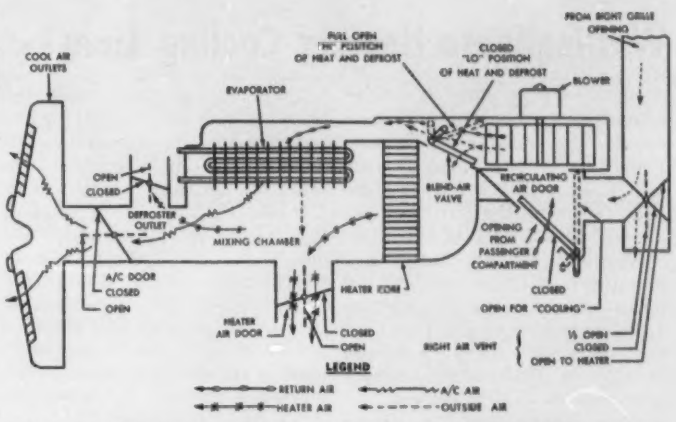


FIG. 3—Schematic shows air flow for cooling or heating in Edsel Dial-Temp system.

Sight glass of the Dial-Temp system is located in the liquid line on the left front fender apron.

Refrigerant-12 is used in the Edsel Dial-Temp. Complete charge is 3½ lbs.

Service procedures, including the performance test, on the Edsel Dial-Temp are identical with those for the Mercury Climate Dial.

Polar Air System

The Edsel Polar Air under-dash unit, as previously mentioned, is virtually the same as the Ford PolarAire under-dash unit, so the descriptive data and service procedures given in the chapter on Ford will apply to the Edsel unit.

Refrigerant-12 is used. Complete charge is 3 lbs.

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Westinghouse Heating Cooling Lines--

(Concluded from Page 1, Col. 4)

commitments to the division should be adequate through February, even allowing for the possibility of further work stoppage following the 80-day "cooling off" period, Serfass indicated.

Keynoting the meetings, which brought in distributors from all parts of the country, Serfass called attention to the fact that the division's sales increased sharply in 1959 while product costs and expenses dropped.

"The availability of funds generated from improved products will allow us to 'plow back' more into product developments and an enlarged marketing program," he declared, adding that "we will increase product development investment alone by 25% in 1960.

Increase Employment

"To illustrate the company's increase in air conditioning sales, the division has been required to increase employment at the Staunton plant in September and October, the normal period for layoffs in the air conditioning industry," Serfass also pointed out.

The new self-contained, air-to-air heat pumps will be available in 2, 3, 4, and 5-ton sizes, announced J. A. Cerny, residential product sales manager, in presenting the line.

These units will be competitively priced, he said, and will be in addition to the "deluxe" line of spit system heat pumps in sizes of 3½, 5, and 7 tons.

Also available in 2, 3, 4, and 5-ton sizes, the new self-contained air-cooled air conditioners "are ideally suited for applications in the low cost housing market," Cerny explained.

Other developments in the Westinghouse residential line include a new line of horizontal gas and oil furnaces; new cooling coils with knockdown cabinets to match the complete line of basement, upflow, and counterflow furnaces; improvements in air filtration and electronic air cleaners, and the inclusion of germicidal filters in all standard heating furnaces.

Furnaces To Be Made Entirely at Elyria Plant

Manufacturing of Westinghouse furnaces next year will be done entirely at the plant in Elyria, Ohio, Cerny also told the distributors.

Addition of new 10 and 15-hp. split system air-cooled conditioners to the Westinghouse commercial line was announced by R. L. Sherrill, commercial and industrial product sales manager, who pointed out that this line now extends from 2 to 50 tons in package equipment.

Both of the new units employ two compressors, which not only permit capacity reduction or zoning but cut wiring costs as well, he said.

Further strengthening of the company's position in the commercial and industrial markets was seen by Sherrill in announcing that as of Jan. 1, 1960, all large reciprocating compressors would be produced at the Staunton plant "to take full advantage of our specialized air conditioning manufacturing facilities."

Emphasizing that "Westinghouse is dedicated to serving the requirements of professional air conditioning and heating distributors and contractors," D. R. Meckstroth, manager of marketing, further declared, "We clearly show our seriousness of purpose by having a complete product line and by insuring that Westinghouse will grow as a full-line producer of air conditioning and heating products for all three markets—commercial, industrial, and residential."

(In a statement following the three meetings, Meckstroth disclosed that the distributors "responded by providing record order backlogs for this division.")

Part of the program was devoted to a rundown of the division's national promotion program for 1960, including national, shelter, and trade publication advertising, as outlined by T. J. D. Dunphy, manager of marketing services, and Carl Cannon, sales promotion manager.

'Total Electric Home' Program Increased

An increased "Total Electric Home" program—the heart of which is electric heating and cooling—for 1960 was disclosed by Dunphy, who also reviewed the Westinghouse marketing services to "support the sale," including a complete package of finance plans.

Various promotional aids and selling tools, including a full color sound film available to distributors, were described by Cannon.

Howard Blair, general service manager, appeared on the program to tell distributors that service problems are continually being reduced, partly because of design and manufacturing techniques and partly because of "the policy of selling through professional distributors."

A unique factory tour was a highlight of these distributor meetings. Each visitor was provided with a printed tour guide which also permitted him to write out questions for later discussion, and at each of the 10 "stations" on the tour practiced "barkers" (key factory executives) described the operations, using a portable public address system.

(It was the first time this reporter ever caught every word on a group plant tour.)

The second day of the conference was an "open house" for the distributors. The informal sessions were opened by R. N. Campbell, vice president, Westinghouse, who re-emphasized Westinghouse's dedication to growth in all areas of the air conditioning industry—commercial, industrial, and residential.

"It is our conviction," stated Campbell, "that an air conditioning manufacturer to be strong in any one market must be strong in all three."

Bad Heating Jobs--

(Concluded from Page 1, Col. 5)

"lack of a licensing law for installers of heating systems in Detroit and many suburbs is being blamed for widespread complaints of inefficient and even dangerous heating plants."

It quoted several leaders of local heating groups on the need for such a law to get inspection of complete heating systems and not just the combustion unit.

However, a suggested amendment to stiffen the Detroit safety ordinance was considered by an industry committee a few weeks ago and rejected as unworkable and inadequate. (See page 41, Nov. 2 issue of NEWS.)

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